PIONEER®
The Art of Entertainment

Service Manual

DEH-P645R

ORDER NO.
CRT2148

MULTI-CD CONTROL HIGH POWER CD PLAYER WITH RDS TUNER

DEH-P645R EW
DEH-P545R EW
DEH-P544R EW
DEH-P443R EW

COMPACT disc DIGITAL AUDIO

- **See the separate manual CX-597(CRT1829) for the CD mechanism description, disassembly and circuit description.**
- **The CD mechanism employed in this model is one of S7 series.**

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● **CD Player Service Precautions**

1. For pickup unit(CXX1230) handling, please refer to"Disassembly"(CX-597 Service Manual CRT1829). During replacement, handling precautions shall be taken to prevent an electrostatic discharge(protection by a short pin).
2. During disassembly, be sure to turn the power off since an internal IC might be destroyed when a connector is plugged or unplugged.
3. Please checking the grating after changing the service pickup unit(see page 71).

1. SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer.
Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty.
If you are not qualified to perform the repair of this product properly and safely; you should not risk trying to do so and refer the repair to a qualified service technician.

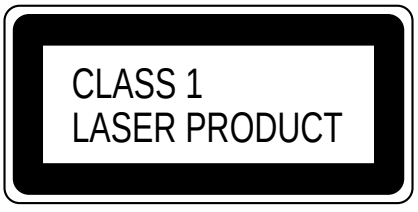
1. Safety Precautions for those who Service this Unit.

- **When checking or adjusting the emitting power of the laser diode exercise caution in order to get safe, reliable results.**

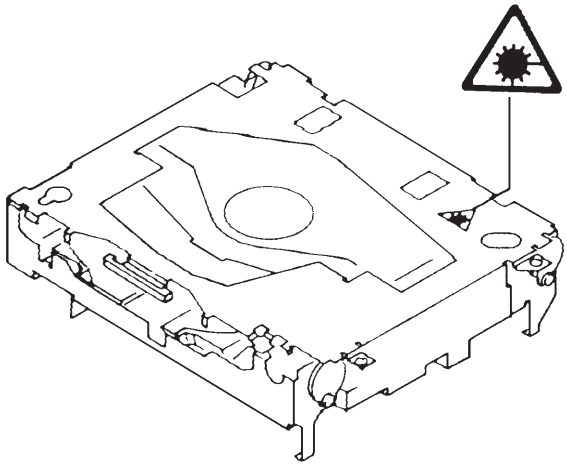
Caution:

1. During repair or tests, minimum distance of 13cm from the focus lens must be kept.
2. During repair or tests, do not view laser beam for 10 seconds or longer.

2. A "CLASS 1 LASER PRODUCT" label is affixed to the rear of the player.



3. The triangular label is attached to the mechanism unit frame.



4. Specifications of Laser Diode

Specifications of laser radiation fields to which human access is possible during service.
Wavelength = 800 nanometers

2. EXPLODED VIEWS AND PARTS LIST

2.1 PACKING

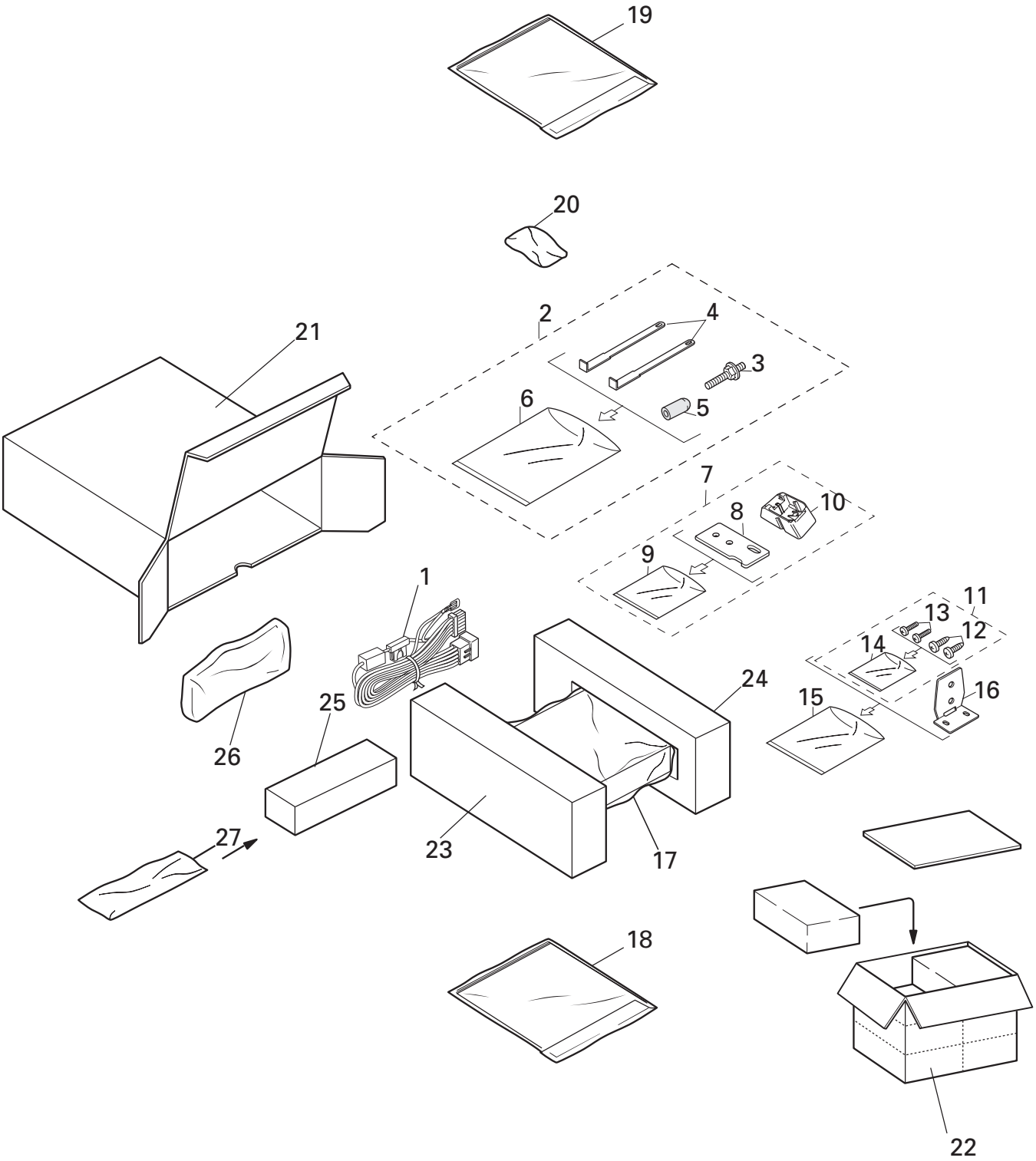


Fig. 1

NOTE:

- Parts marked by "*"are generally unavailable because they are not in our Master Spare Parts List.
- Screws adjacent to ∇ mark on the product are used for disassembly.

● PACKING SECTION PARTS LIST

(1) PARTS LIST

Mark	No.	Description	Part No.
	1	Cord Assy	See Contrast table(2)
	2	Accessory Assy	CEA1917
	3	Screw	CBA1284
	4	Handle	CNC5395
	5	Bush	CNV1009
*	6	Polyethylene Bag	E36-615
	7	Base Assy	See Contrast table(2)
*	8	Sheet	See Contrast table(2)
	9	Polyethylene Bag	See Contrast table(2)
*	10	Base	See Contrast table(2)
	11	Screw Assy	See Contrast table(2)
	12	Screw	See Contrast table(2)
	13	Screw	See Contrast table(2)
*	14	Polyethylene Bag	See Contrast table(2)
*	15	Polyethylene Bag	See Contrast table(2)
	16	Bracket	See Contrast table(2)
	17	Polyethylene Bag	CEG-162
	18-1	Polyethylene Bag	CEG1116
	18-2	Owner's Manual	See Contrast table(2)
	18-3	Owner's Manual	See Contrast table(2)
	18-4	Owner's Manual	See Contrast table(2)
	18-5	Owner's Manual	See Contrast table(2)
	18-6	Installation Manual	See Contrast table(2)
	18-7	Label	See Contrast table(2)
	18-8	Passport	See Contrast table(2)
	18-9	Warranty Card	See Contrast table(2)
	18-10	Caution Card	See Contrast table(2)
	19-1	Polyethylene Bag	See Contrast table(2)
	19-2	Installation Manual	See Contrast table(2)
*	19-3	Label	See Contrast table(2)
	19-4	Passport	See Contrast table(2)
*	19-5	Warranty Card	See Contrast table(2)
	20	Battery	See Contrast table(2)
	21	Carton	See Contrast table(2)
	22	Contain Box	See Contrast table(2)
	23	Protector	CHP1766
	24	Protector	CHP1767
	25	Spacer	See Contrast table(2)
	26	Case Assy	CXB1063
	27	Remote Control Assy	See Contrast table(2)

● Owner's Manual

Model	Part No.	Language
DEH-P645R/EW	CRD2557	English, Spanish
	CRD2558	German, French
	CRD2559	Italian, Dutch
DEH-P545R/EW	CRD2568	English, Spanish
	CRD2569	German, French
	CRD2570	Italian, Dutch
DEH-P544R/EW	CRD2631	English, Spanish, Italian
DEH-P443R/EW	CRD2633	German, French, Dutch

● Installation Manual

Model	Part No.	Language
DEH-P645R/EW	CRD2560	English, Spanish, German, French, Italian, Dutch
DEH-P545R/EW	CRD2571	English, Spanish, German, French, Italian, Dutch
DEH-P544R/EW	CRD2632	English, Spanish, Italian
DEH-P443R/EW	CRD2634	German, French, Dutch

(2) CONTRAST TABLE

DEH-P645R/EW, DEH-P545R/EW, DEH-P544R/EW and DEH-P443R/EW are constructed same except for the following:

	Mark No.	Symbol and Description	Part No. DEH-P645R/EW	Part No. DEH-P545R/EW
	1	Cord Assy	CDE5485	CDE5486
	7	Base Assy	CEA2344	Not used
*	8	Sheet	CZA3371	Not used
	9	Polyethylene Bag	CZE3188	Not used
*	10	Base	CZN6466	Not used
	11	Screw Assy	CZE3198	Not used
	12	Screw	BNC40P120FZK	Not used
	13	Screw	BPZ30P100FZK	Not used
*	14	Polyethylene Bag	CEG-127	Not used
*	15	Polyethylene Bag	CZE3201	Not used
	16	Bracket	CZN6467	Not used
	18-2	Owner's Manual	CRD2557	CRD2568
	18-3	Owner's Manual	CRD2558	CRD2569
	18-4	Owner's Manual	CRD2559	CRD2570
	19-2	Installation Manual	CRD2560	CRD2571
	20	Battery	CEX1006	Not used
	21	Carton	CHG3436	CHG3440
	22	Contain Box	CHL3436	CHL3440
	25	Spacer	CHW1433	Not used
	27	Remote Control Assy	CXB1160	Not used

Mark No.	Symbol and Description	Part No. DEH-P645R/EW	Part No. DEH-P544R/EW
	1 Cord Assy	CDE5485	CDE5486
	7 Base Assy	CEA2344	Not used
*	8 Sheet	CZA3371	Not used
	9 Polyethylene Bag	CZE3188	Not used
*	10 Base	CZN6466	Not used
	11 Screw Assy	CZE3198	Not used
	12 Screw	BNC40P120FZK	Not used
	13 Screw	BPZ30P100FZK	Not used
*	14 Polyethylene Bag	CEG-127	Not used
*	15 Polyethylene Bag	CZE3201	Not used
	16 Bracket	CZN6467	Not used
	18-2 Owner's Manual	CRD2557	Not used
	18-3 Owner's Manual	CRD2558	Not used
	18-4 Owner's Manual	CRD2559	Not used
	18-5 Owner's Manual	Not used	CRD2631
	18-6 Installation Manual	Not used	CRD2632
*	18-7 Label	Not used	CRW1343
*	18-9 Warranty Card	Not used	CRY1087
	18-10 Caution Card	CRP1182	Not used
	19-1 Polyethylene Bag	CEG1116	Not used
	19-2 Installation Manual	CRD2560	Not used
*	19-3 Label	CRW1343	Not used
	19-4 Passport	CRY1013	Not used
*	19-5 Warranty Card	CRY1087	Not used
	20 Battery	CEX1006	Not used
	21 Carton	CHG3436	CHG3441
	22 Contain Box	CHL3436	CHL3441
	25 Spacer	CHW1433	Not used
	27 Remote Control Assy	CXB1160	Not used

Mark No.	Symbol and Description	Part No. DEH-P645R/EW	Part No. DEH-P443R/EW
1	Cord Assy	CDE5485	CDE5627
7	Base Assy	CEA2344	Not used
* 8	Sheet	CZA3371	Not used
9	Polyethylene Bag	CZE3188	Not used
* 10	Base	CZN6466	Not used
11	Screw Assy	CZE3198	Not used
12	Screw	BNC40P120FZK	Not used
13	Screw	BPZ30P100FZK	Not used
* 14	Polyethylene Bag	CEG-127	Not used
* 15	Polyethylene Bag	CZE3201	Not used
16	Bracket	CZN6467	Not used
18-2	Owner's Manual	CRD2557	Not used
18-3	Owner's Manual	CRD2558	Not used
18-4	Owner's Manual	CRD2559	Not used
18-5	Owner's Manual	Not used	CRD2633
18-6	Installation Manual	Not used	CRD2634
* 18-7	Label	Not used	CRW1343
18-8	Passport	Not used	CRY1013
* 18-9	Warranty Card	Not used	CRY1087
18-10	Caution Card	CRP1182	Not used
19-1	Polyethylene Bag	CEG1116	Not used
19-2	Installation Manual	CRD2560	Not used
* 19-3	Label	CRW1343	Not used
19-4	Passport	CRY1013	Not used
* 19-5	Warranty Card	CRY1087	Not used
20	Battery	CEX1006	Not used
21	Carton	CHG3436	CHG3442
22	Contain Box	CHL3436	CHL3442
25	Spacer	CHW1433	Not used
27	Remote Control Assy	CXB1160	Not used

2.2 EXTERIOR

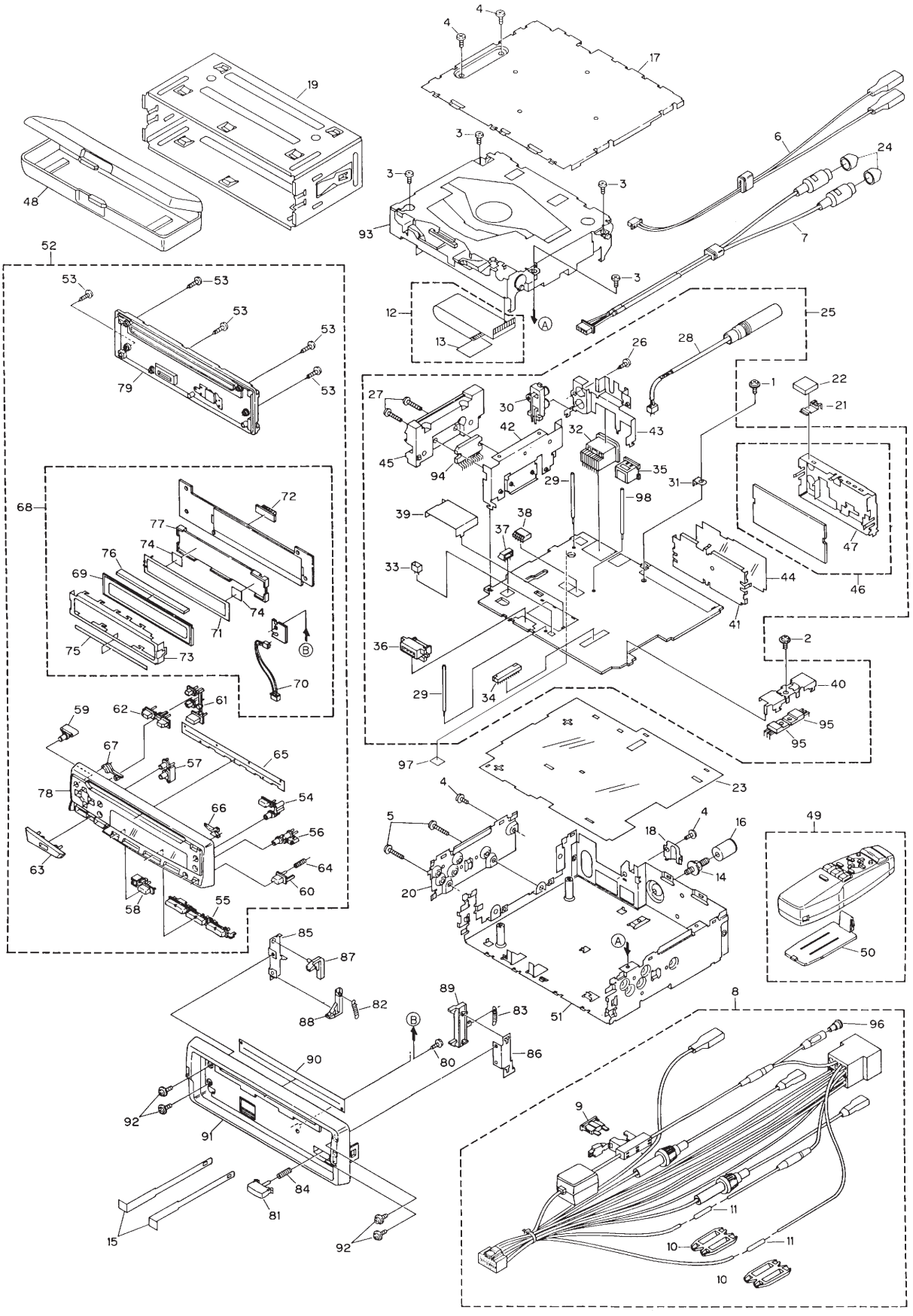


Fig. 2

● EXTERIOR SECTION PARTS LIST

(1) PARTS LIST

Mark No.	Description	Part No.
1	Screw	ASZ26P055FUC
2	Screw	ASZ26P080FMC
3	Screw	BSZ26P050FMC
4	Screw	BSZ30P060FMC
5	Screw	BSZ30P180FMC
6	Cord Assy	See Contrast table(2)
7	Cord Assy	See Contrast table(2)
8	Cord Assy	See Contrast table(2)
9	Fuse	CEK1136
10	Cap	CNS1472
11	Resistor	RS1/2PMF102J
12	Cable	CDE5635
13	Insulator	CNM5761
14	Screw	CBA1284
15	Handle	CNC5395
16	Bush	CNV1009
17	Case	CNB2119
18	Holder	CNC4963
19	Holder	CNC6798
20	Holder	CNC6862
21	Earth Terminal	CNC7358
22	Spacer	CNM4913
23	Insulator	CNM5535
24	Cap	See Contrast table(2)
25	Tuner Amp Unit	See Contrast table(2)
26	Screw	BPZ26P080FMC
27	Screw	BSZ26P140FMC
28	Antenna Cord	CDH1234
29	Clamper	CEF1009
30	Pin Jack(CN253)	CKB1028
31	Terminal(CN501)	CKF1059
32	Plug(CN901)	CKM1278
33	Plug(CN802)	CKS-783
34	Connector(CN651)	CKS2228
35	Connector(CN101)	CKS3408
36	Connector(CN801)	CKS3581
37	Connector(CN851)	See Contrast table(2)
38	Connector(CN254)	See Contrast table(2)
39	Holder	CNC5968
40	Holder	CNC6132
41	Holder	CNC6356
42	Holder	CNC7429
43	Holder	See Contrast table(2)
44	Insulator	CNM4684
45	Heat Sink	CNR1458

Mark No.	Description	Part No.
46	FM/AM Tuner Unit	See Contrast table(2)
47	Holder	CNC6555
48	Case Assy	CXB1063
49	Remote Control Assy	See Contrast table(2)
50	Battery Cover	See Contrast table(2)
51	Chassis Unit	See Contrast table(2)
52	Detach Grille Assy	See Contrast table(2)
53	Screw	BPZ20P100FZK
54	Button	See Contrast table(2)
55	Button	See Contrast table(2)
56	Button	CAC5399
57	Button	CAC5403
58	Button	CAC5404
59	Button	See Contrast table(2)
60	Button	See Contrast table(2)
61	Button	See Contrast table(2)
62	Button	See Contrast table(2)
63	Button	See Contrast table(2)
64	Spring	CBH2103
65	Cover	CNM4704
66	Lighting Conductor	CNV5180
67	Lighting Conductor	CNV5181
68	Keyboard Unit	See Contrast table(2)
69	LCD	See Contrast table(2)
70	Cord	CDE5665
71	EL	CEL1536
72	Connector(CN1801)	CKS3580
73	Holder	CNC7435
74	Film	CNM4349
75	Spacer	CNM5449
76	Connector	CNV5182
77	Housing	CNV5183
78	Grille Unit	See Contrast table(2)
79	Cover Unit	See Contrast table(2)
80	Screw	BPZ20P060FMC
81	Button	CAC5180
82	Spring	CBH1834
83	Spring	CBH1835
84	Spring	CBH1996
85	Bracket	CNC6135
86	Bracket	CNC6791
87	Arm	CNV4692
88	Arm	CNV4693
89	Arm	CNV4951
90	Cover	CNM4875

Mark No.	Description	Part No.
91	Panel	See Contrast table(2)
92	Screw	IMS20P030FZK
93	CD Mechanism Module	CXK5004
94	IC(IC201)	See Contrast table(2)
95	Transistor(Q951, 971)	2SD2396
96	Terminal Cover	CKX-003
97	Spacer	CNM5875
98	Clamper	See Contrast table(2)

(2) CONTRAST TABLE

DEH-P645R/EW, DEH-P545R/EW, DEH-P544R/EW and DEH-P443R/EW are constructed same except for the following:

		Part No.	
Mark No.	Symbol and Description	DEH-P645R/EW	DEH-P443R/EW
6	Cord Assy	CDE5185	Not used
7	Cord Assy	CDE5209	Not used
8	Cord Assy	CDE5485	CDE5627
24	Cap	CNV2680	Not used
25	Tuner Amp Unit	CWM5619	CWM5621
37	Connector(CN851)	CKS3597	Not used
38	Connector(CN254)	CKS3598	Not used
43	Holder	CNC7430	CNC7434
46	FM/AM Tuner Unit	CWE1416	CWE1470
49	Remote Control Assy	CXB1160	Not used
50	Battery Cover	CNS4406	Not used
51	Chassis Unit	CXB1981	CXB1990
52	Detach Grille Assy	CXB1992	CXB2002
54	Button	CAC5397	CAC5406
55	Button	CAC5398	CAC5449
59	Button	CAC5405	CAC5411
60	Button	CAC5430	CAC5514
61	Button	CAC5450	CAC5544
62	Button	CAC5451	CAC5545
63	Button	CAC5536	CAC5417
68	Keyboard Unit	CWM5632	CWM5635
69	LCD	CAW1458	CAW1464
78	Grille Unit	CXB1965	CXB1967
79	Cover Unit	CXB2480	CXB2481
91	Panel	CNS4870	CNS4908
94	IC(IC201)	TDA7386	TDA7384
98	Clamper	CEF1009	Not used

Mark No.	Symbol and Description	Part No.	
		DEH-P645R/EW	DEH-P545R/EW
6	Cord Assy	CDE5185	Not used
7	Cord Assy	CDE5209	Not used
8	Cord Assy	CDE5485	CDE5486
24	Cap	CNV2680	Not used
25	Tuner Amp Unit	CWM5619	CWM5624
37	Connector(CN851)	CKS3597	Not used
38	Connector(CN254)	CKS3598	Not used
43	Holder	CNC7430	CNC7434
49	Remote Control Assy	CXB1160	Not used
50	Battery Cover	CNS4406	Not used
51	Chassis Unit	CXB1981	CXB1986
52	Detach Grille Assy	CXB1992	CXB1998
68	Keyboard Unit	CWM5632	CWM5638
69	LCD	CAW1458	CAW1461
78	Grille Unit	CXB1965	CXB1971
98	Clamper	CEF1009	Not used

Mark No.	Symbol and Description	Part No.	
		DEH-P645R/EW	DEH-P544R/EW
6	Cord Assy	CDE5185	Not used
7	Cord Assy	CDE5209	Not used
8	Cord Assy	CDE5485	CDE5486
24	Cap	CNV2680	Not used
25	Tuner Amp Unit	CWM5619	CWM5624
37	Connector(CN851)	CKS3597	Not used
38	Connector(CN254)	CKS3598	Not used
43	Holder	CNC7430	CNC7434
49	Remote Control Assy	CXB1160	Not used
50	Battery Cover	CNS4406	Not used
51	Chassis Unit	CXB1981	CXB1987
52	Detach Grille Assy	CXB1992	CXB1999
54	Button	CAC5397	CAC5406
55	Button	CAC5398	CAC5449
59	Button	CAC5405	CAC5411
60	Button	CAC5430	CAC5514
61	Button	CAC5450	CAC5544
62	Button	CAC5451	CAC5545
63	Button	CAC5536	CAC5417
68	Keyboard Unit	CWM5632	CWM5639
69	LCD	CAW1458	CAW1464
78	Grille Unit	CXB1965	CXB1972
79	Cover Unit	CXB2480	CXB2481
91	Panel	CNS4870	CNS4780
98	Clamper	CEF1009	Not used

2.3 CD MECHANISM MODULE

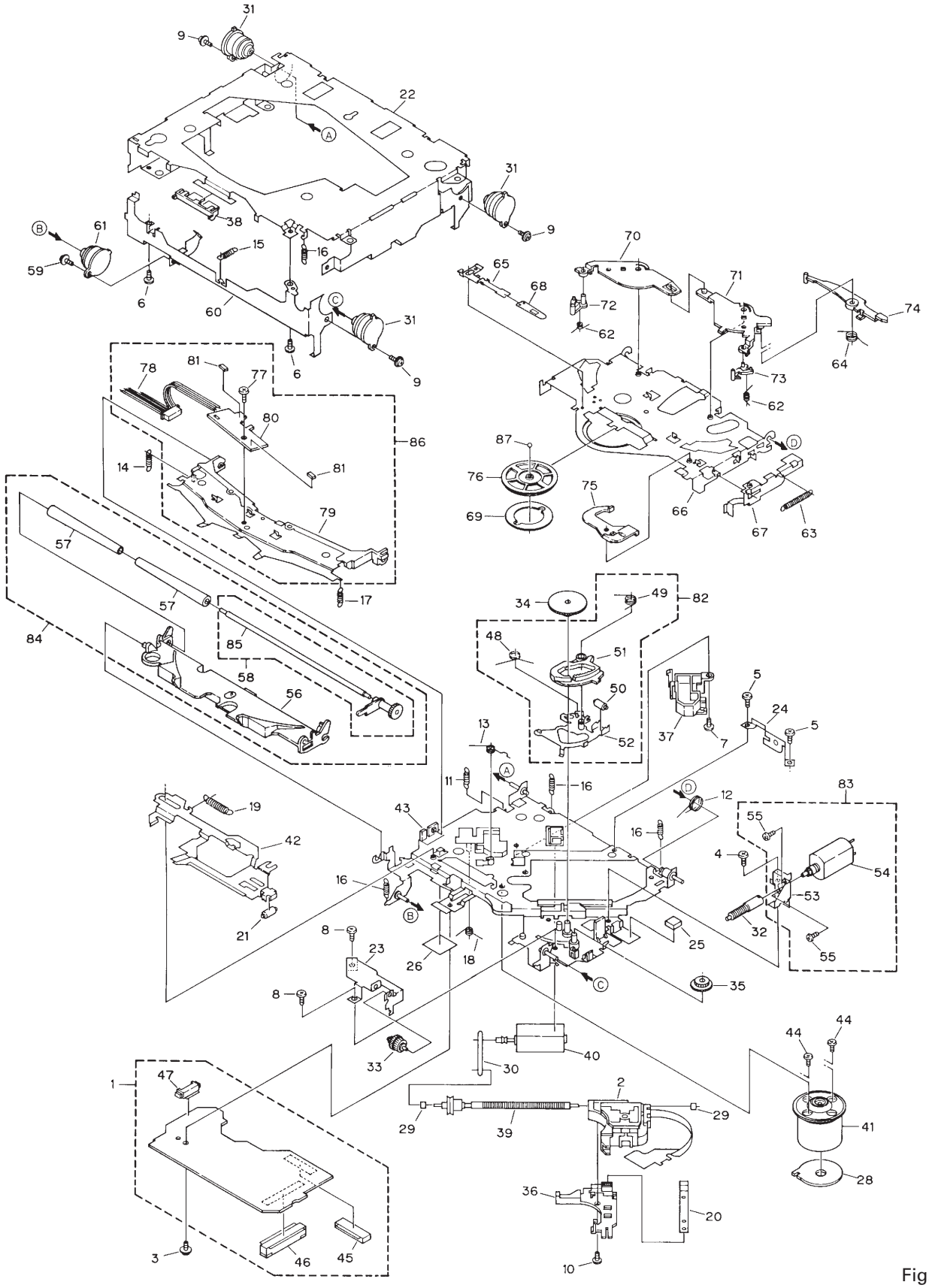


Fig. 3

● CD MECHANISM MODULE SECTION PARTS LIST

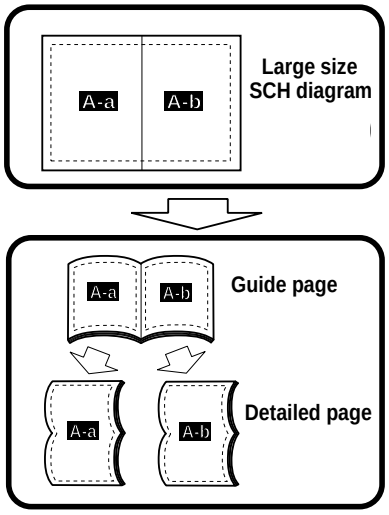
Mark	No.	Description	Part No.
	1	Control Unit	CWX2224
	2	Pickup Unit(Service)	CXX1230
	3	Screw	IMS26P035FMC
	4	Screw	BMZ20P025FMC
	5	Screw	BMZ20P040FMC
	6	Screw	BSZ20P040FMC
	7	Screw	CBA1077
	8	Screw	CBA1250
	9	Screw	CBA1296
	10	Screw	CBA1362
	11	Spring	CBH1724
	12	Spring	CBH1729
	13	Spring	CBH1730
	14	Spring	CBH1731
	15	Spring	CBH1732
	16	Spring	CBH1745
	17	Spring	CBH1848
	18	Spring	CBH1849
	19	Spring	CBH1939
	20	Spring	CBL1214
	21	Roller	CLA2627
	22	Frame	CNC5796
	23	Bracket	CNC5871
*	24	Bracket	CNC6376
	25	Cushion	CNM3917
	26	Sheet	CNM4873
	27	•••••	
	28	PCB	CNP4230
	29	Bearing	CNR1415
	30	Belt	CNT1071
	31	Damper	CNV3974
	32	Gear	CNV4128
	33	Gear	CNV4129
	34	Gear	CNV4130
	35	Gear	CNV4131
	36	Holder	CNV4663
	37	Holder	CNV5071
	38	Guide	CNV4484
	39	Screw Unit(S7)	CXA8699
	40	CRG Motor Unit(S7)	CXA8986
	41	Motor Unit	CXA8912
	42	Lever Unit	CXA9300
	43	Chassis Unit	CXB2574
	44	Screw	JFZ20P025FMC
	45	Connector(CN101)	CKS1953
	46	Connector(CN701)	CKS2774
	47	Connector(CN801)	CKS2196
	48	Spring	CBH1832
	49	Spring	CBH1833
	50	Roller	CLA2627
	51	Arm	CNV4136
	52	Arm Unit	CXA8565
	53	Bracket	CNC6056
	54	Load Motor Unit(S7)	CXA8702
	55	Screw	JFZ20P025FMC
	56	Arm	CNV4120
	57	Roller	CNV4509
	58	Gear Unit(S7)	CXA8701
	59	Screw	CBA1296
	60	Frame	CNC5797
	61	Damper	CNV3974
	62	Spring	CBH1736
	63	Spring	CBH1863
	64	Spring	CBH1945
	65	Spring	CBL1269
	66	Arm	CNC5799
	67	Lever	CNC6054
	68	Spacer	CNM3315
	69	Sheet	CNM4849
	70	Arm	CNV5436
	71	Arm	CNV4123
	72	Arm	CNV4124
	73	Arm	CNV4125
	74	Arm	CNV4138
	75	Arm	CNV4139
	76	Clamper	CNV5308
	77	Screw	CBA1250
	78	Connector(CN1)	CDE4576
	79	Arm	CNC7383
*	80	Gathering PCB	CNX2445
	81	Photo-transistor(Q1, 2)	CPT-230S-X
	82	ELBO Arm Assy(S7)	CXA8889
	83	Load Motor Assy(S7)	CXA8891
	84	LO Arm Assy(S7)	CXA8892
	85	Shaft	CLA3133
	86	Guide Arm Assy(S7)	CXB1850
	87	Ball	CNR1189

3. SCHEMATIC DIAGRAM

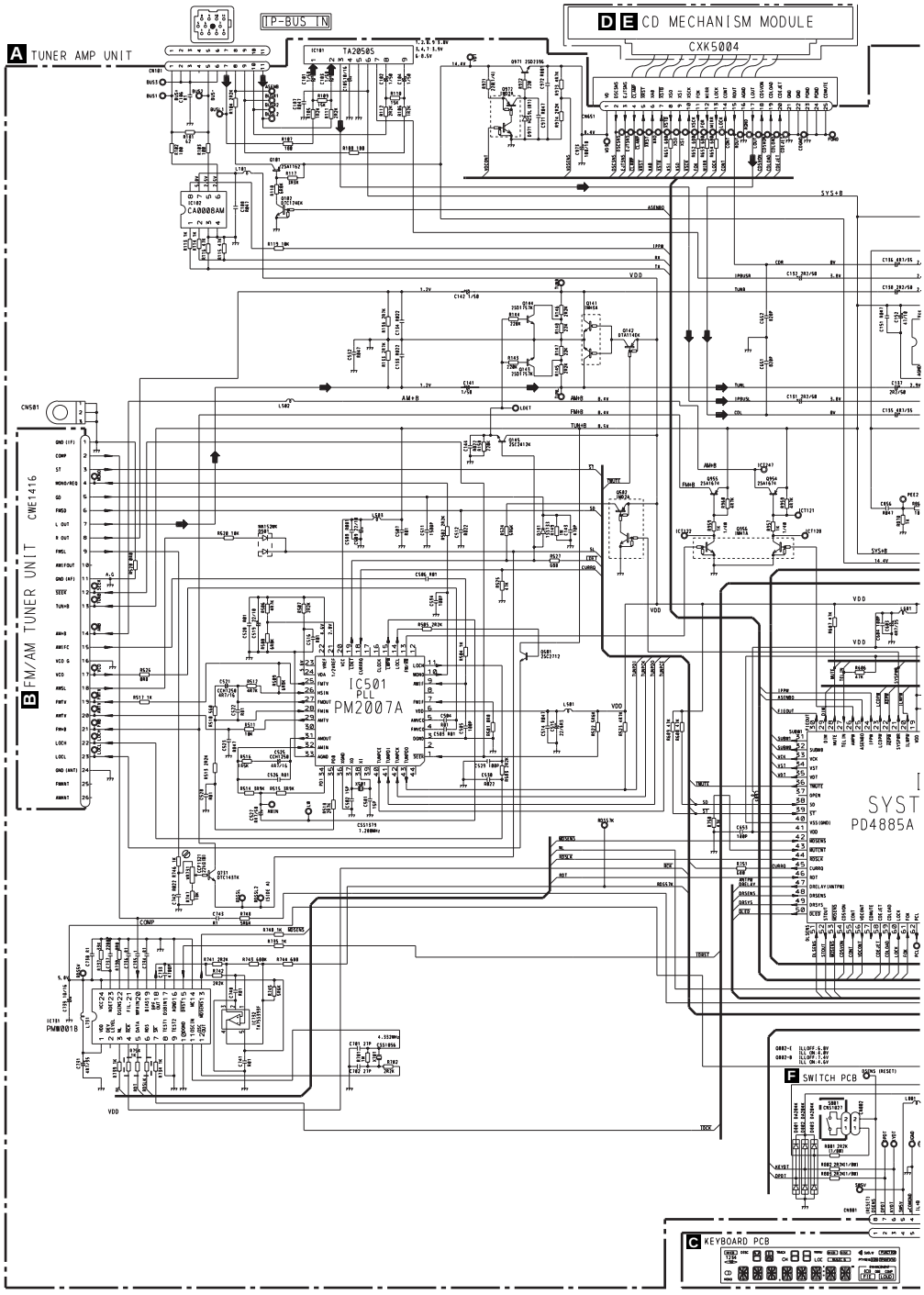
3.1 OVERALL CONNECTION DIAGRAM(GUIDE PAGE)

Note: When ordering service parts, be sure to refer to "EXPLODED VIEWS AND PARTS LIST" or "ELECTRICAL PARTS LIST".

● **DEH-P645R/EW,DEH-P545R/EW,DEH-P544R/EW**

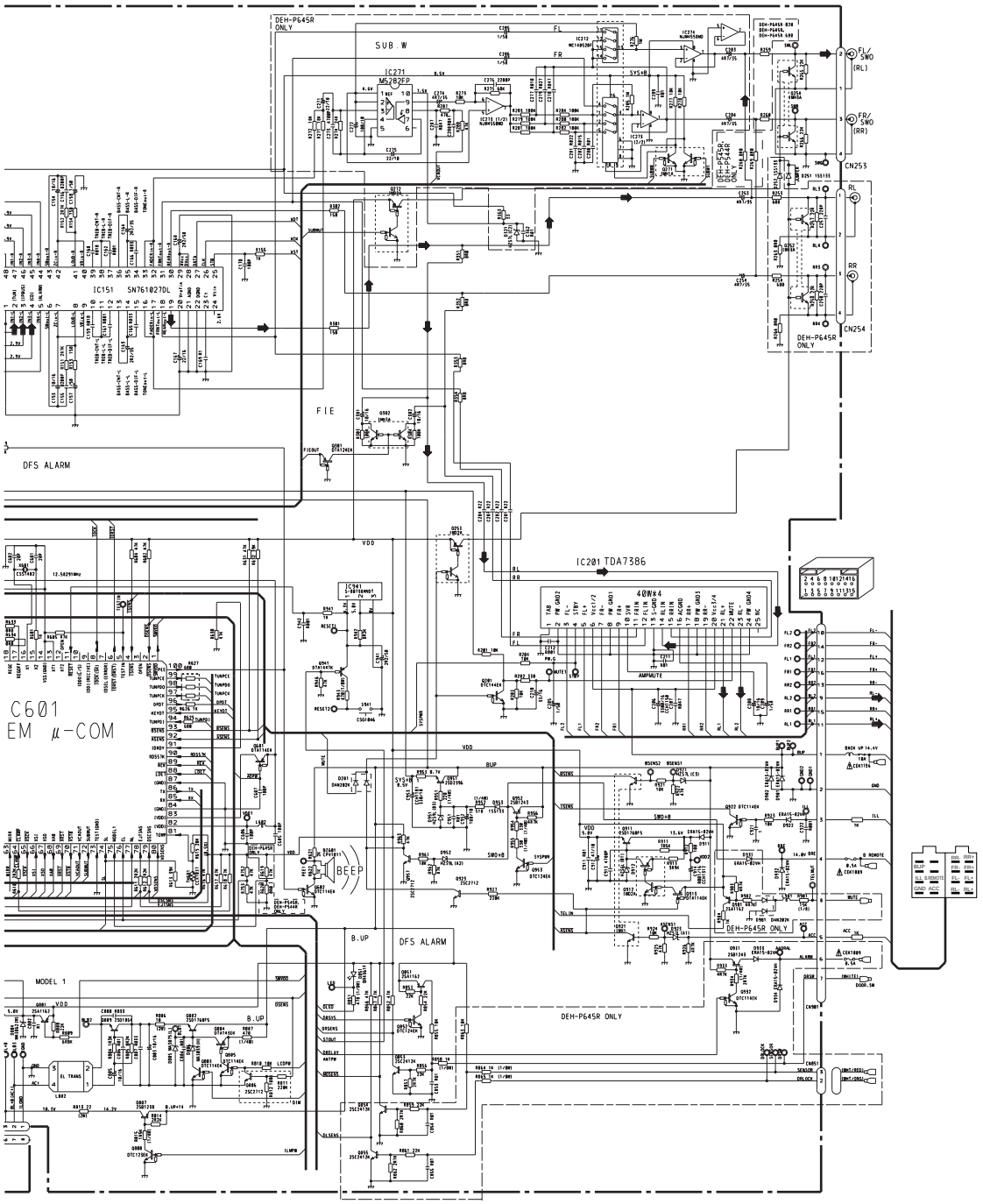


A-a



AF

A-b



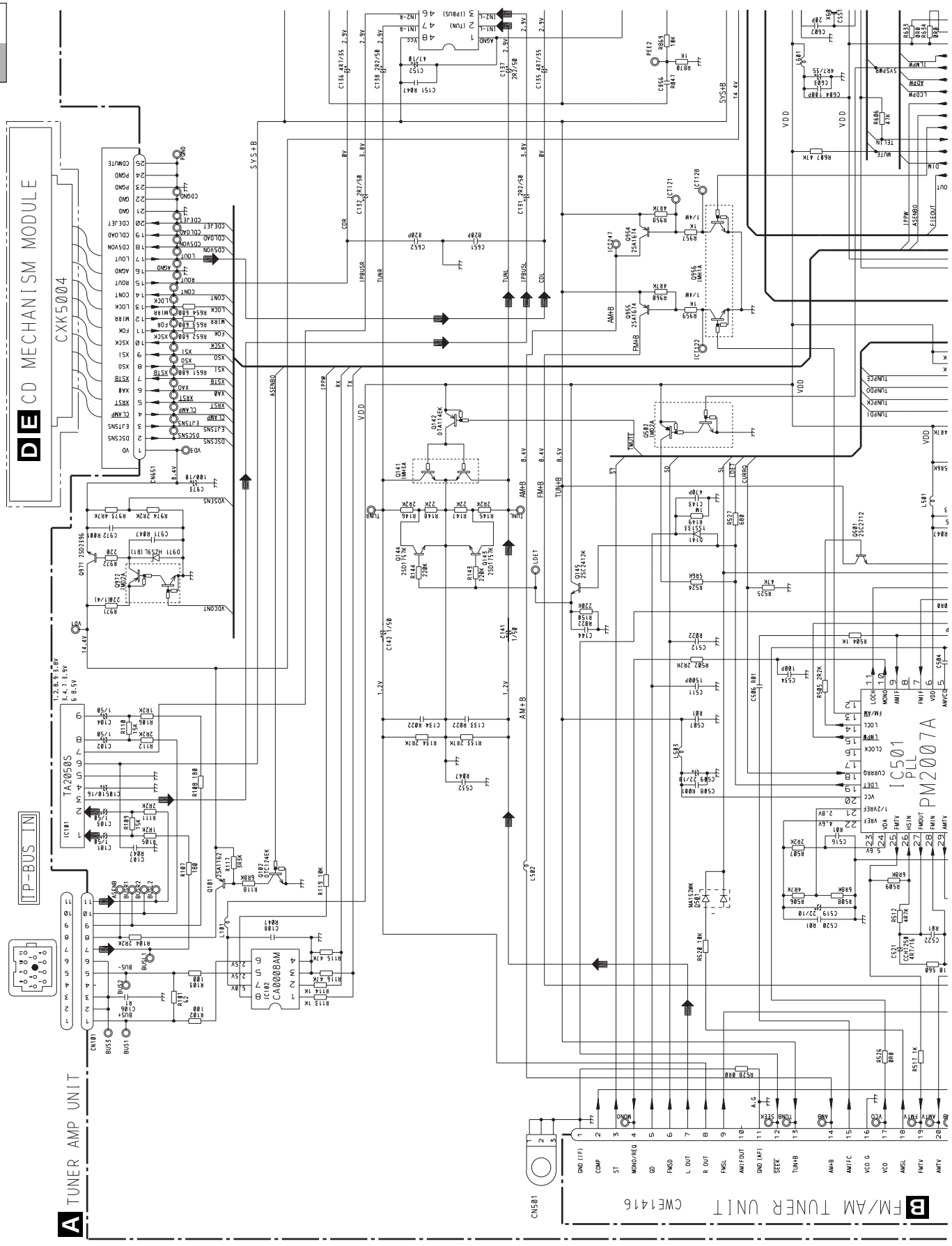
NOTE

- Symbol indicates a resistor. No differentiation is made between chip resistors and discrete resistors.
- Symbol indicates a capacitor. No differentiation is made between chip capacitors and discrete capacitors.

The △mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

Decimal points for resistor and capacitor fixed values are expressed as
2.2→2R2
0.022→R022

Fig. 4


A-a A-b
DE CD MECHANISM MODULE CXK5004
A TUNER AMP UNIT
B FM/AM TUNER UNIT CWE1416
IP-BUS IN
TA2050S
CA0008AM
PM2007A
IC501 PLL
CN651
CN101
CN501

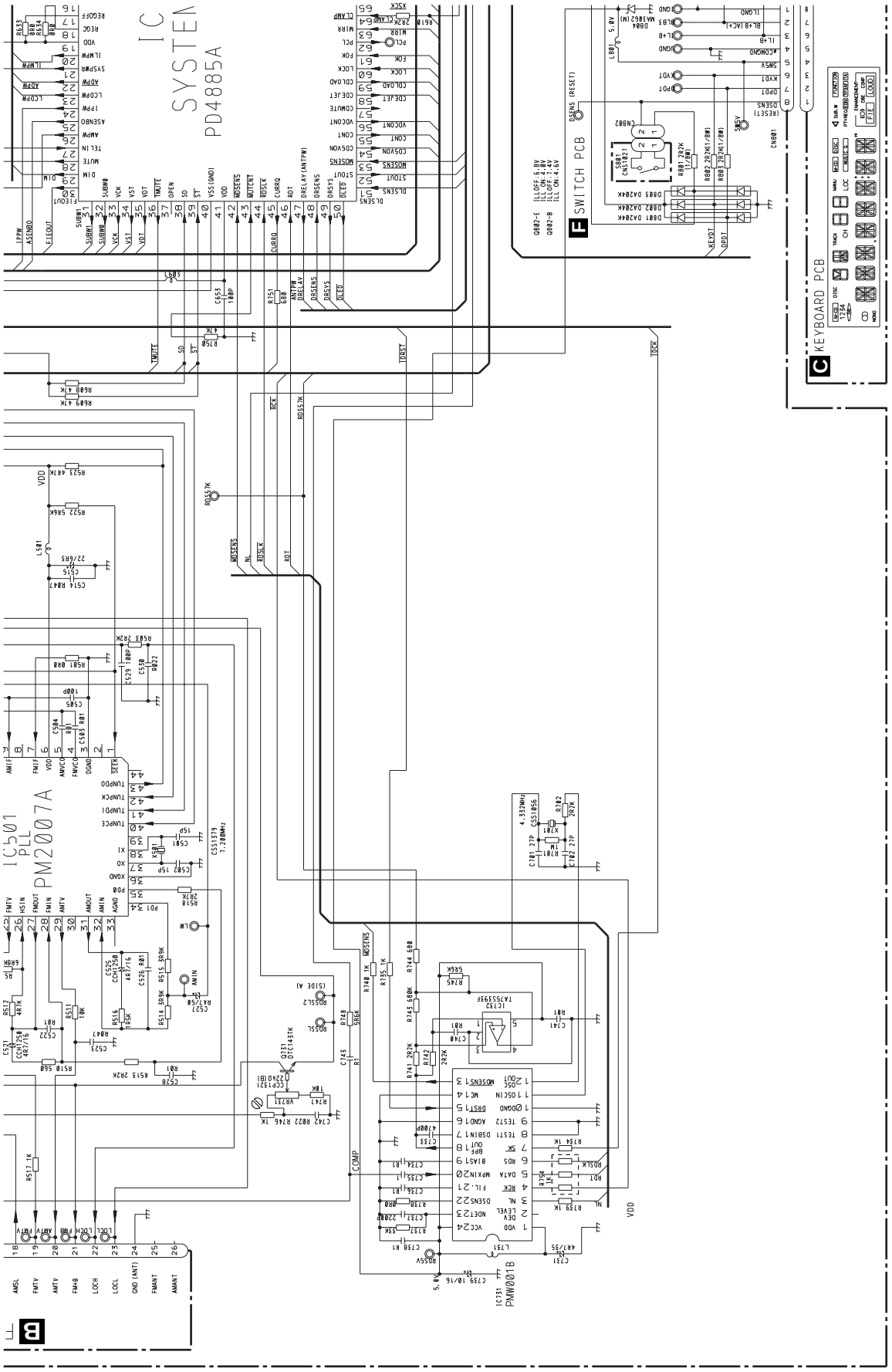
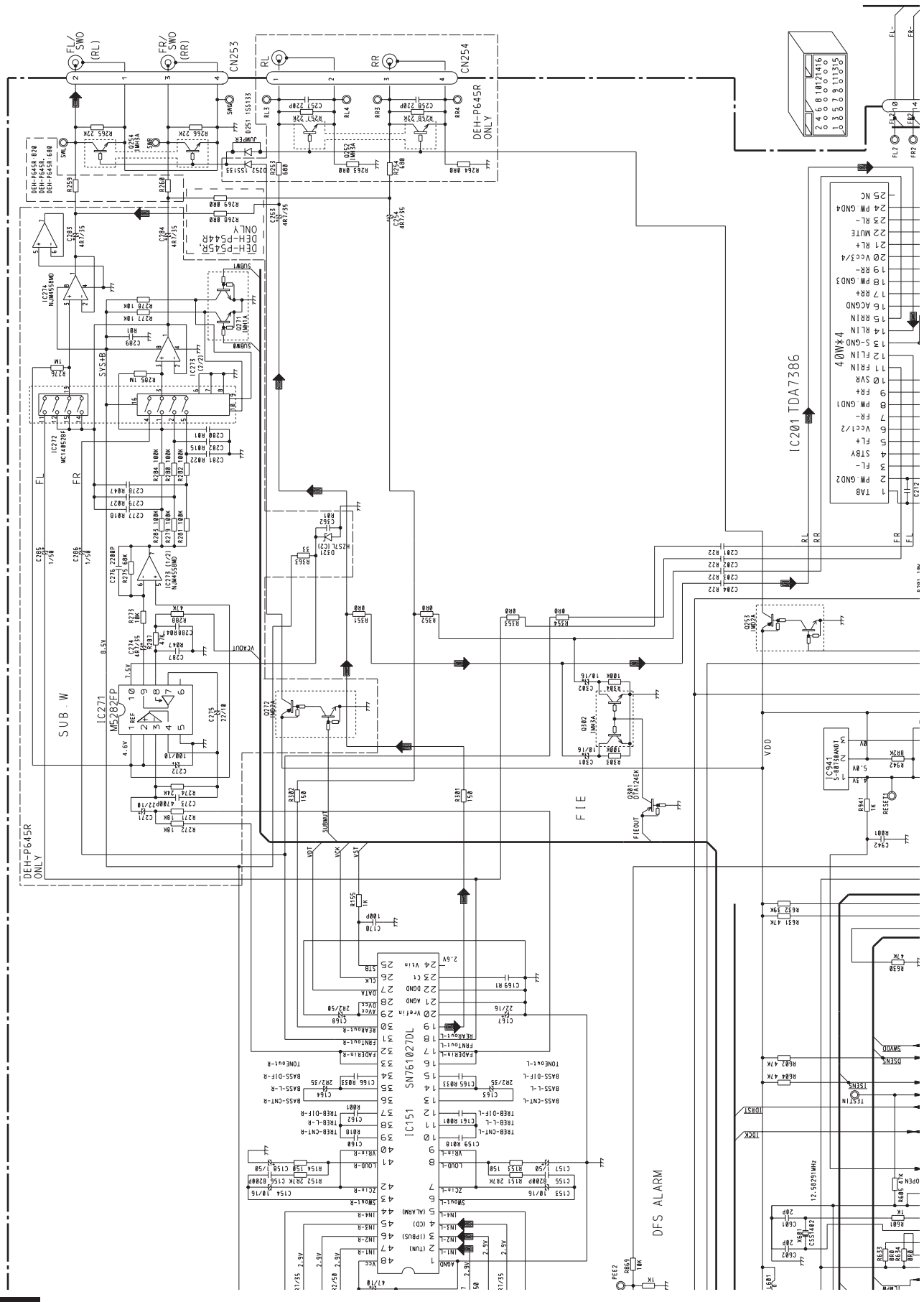

A-b
A-a
IC SYSTEM PD4885A
SWITCH PCB
KEYBOARD PCB
IC501 PLL PM2007A
PWM001B
B
C
F

Fig.5

A-a A-b


FL/ SWO (RL)
FR/ SWO (RR)
CN253
CN254
RL
RR
DEH-P645R ONLY
DEH-P544R, DEH-P545R ONLY
IC201 TDA7386
40W×4
SUB.W
IC271 M52822FP
IC151 SN761027DL
FIE
DFS ALARM
12.5823MHz

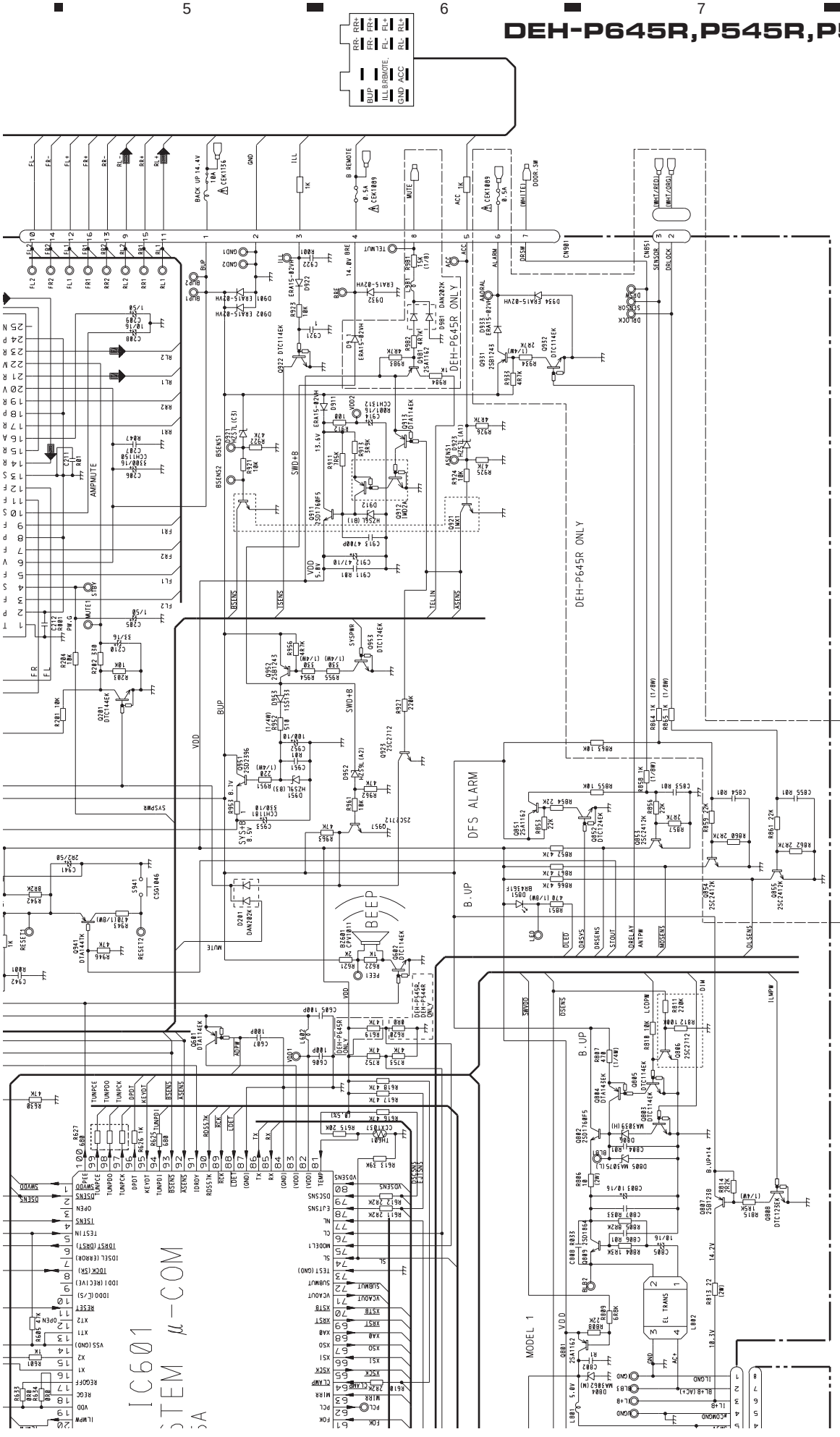
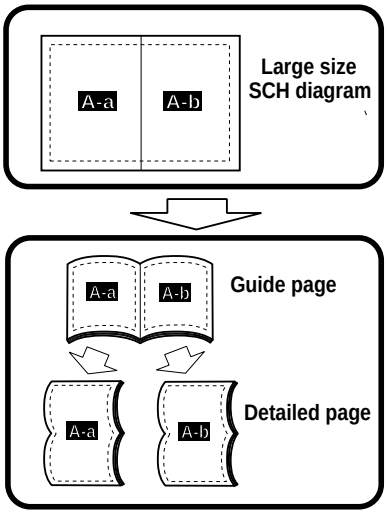

DEH-P645R ONLY
DFS ALARM
BEEP
B.UP
MODEL 1
IC601 μ-COM SYSTEM
NOTE:
Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.
Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.
The △mark found on some component parts indicates the importance of the safety factor of the part.
Therefore, when replacing, be sure to use parts of identical designation.
Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022

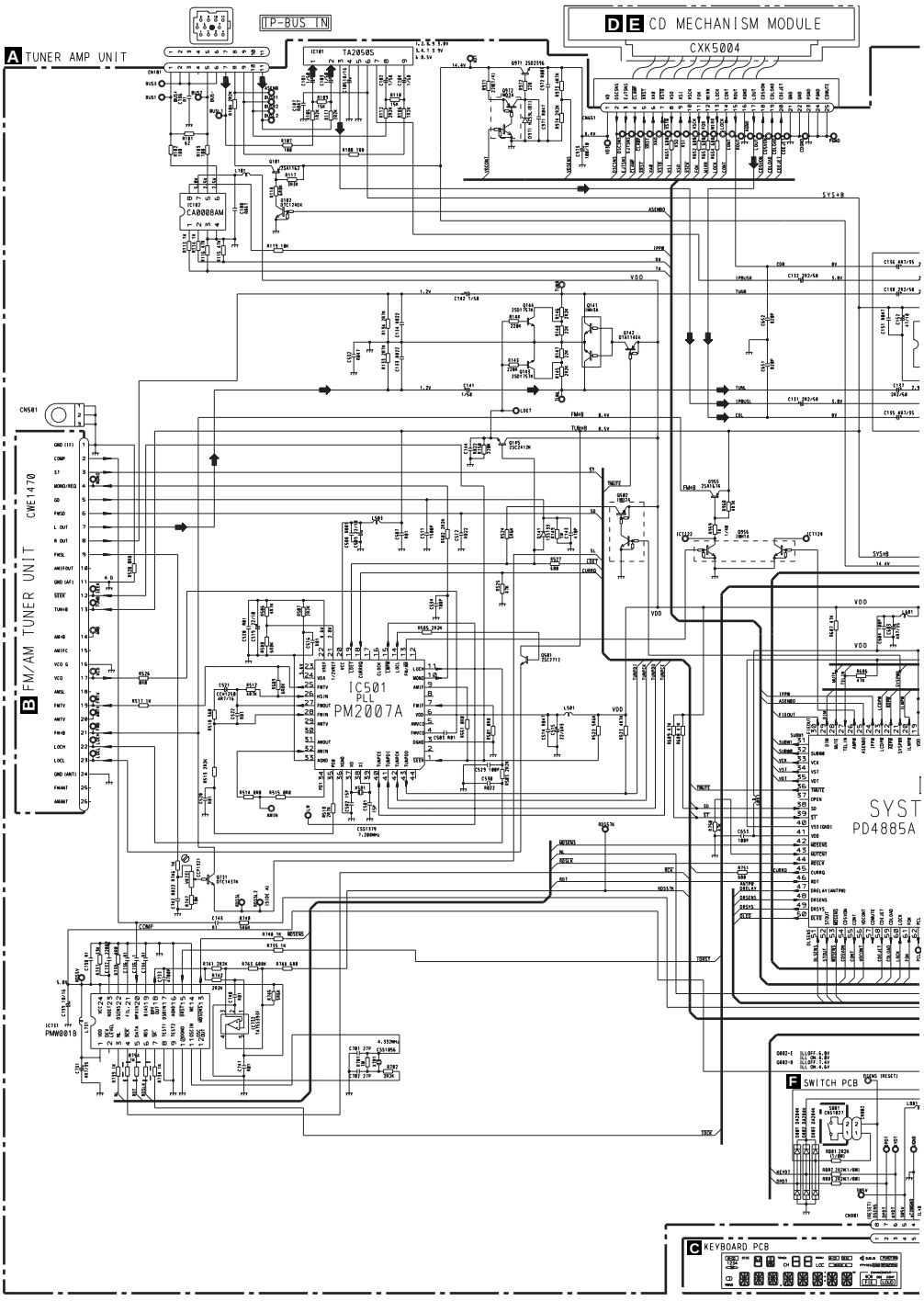
Fig. 6

3.2 OVERALL CONNECTION DIAGRAM(GUIDE PAGE)

● **DEH-P443R/EW**

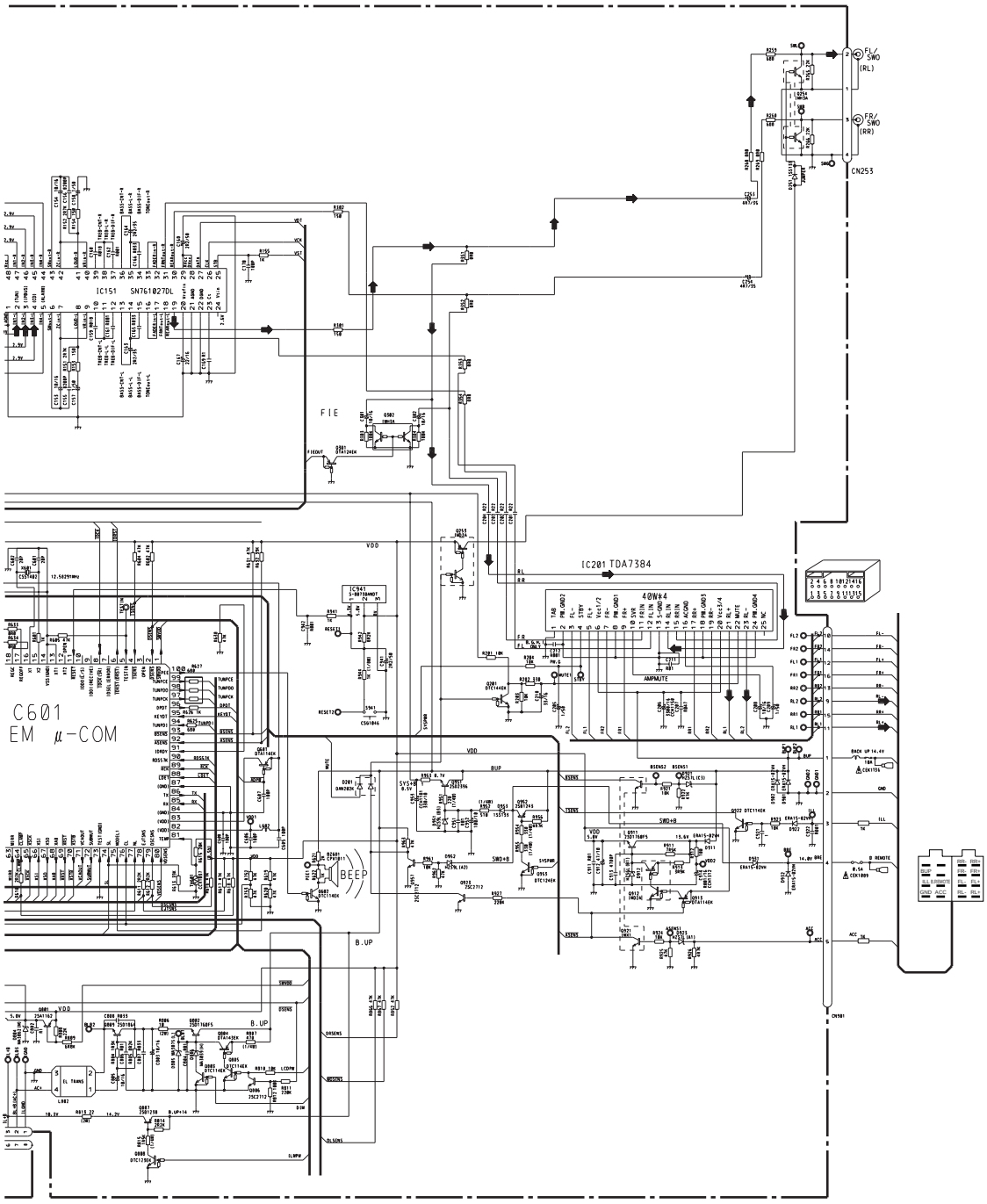


A-a



A

A-b



NOTE:
Symbol indicates a resistor. No differentiation is made between chip resistors and discrete resistors.
Symbol indicates a capacitor. No differentiation is made between chip capacitors and discrete capacitors.

Decimal points for resistor and capacitor fixed values are expressed as
2.2→2R2
0.022→R022

The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

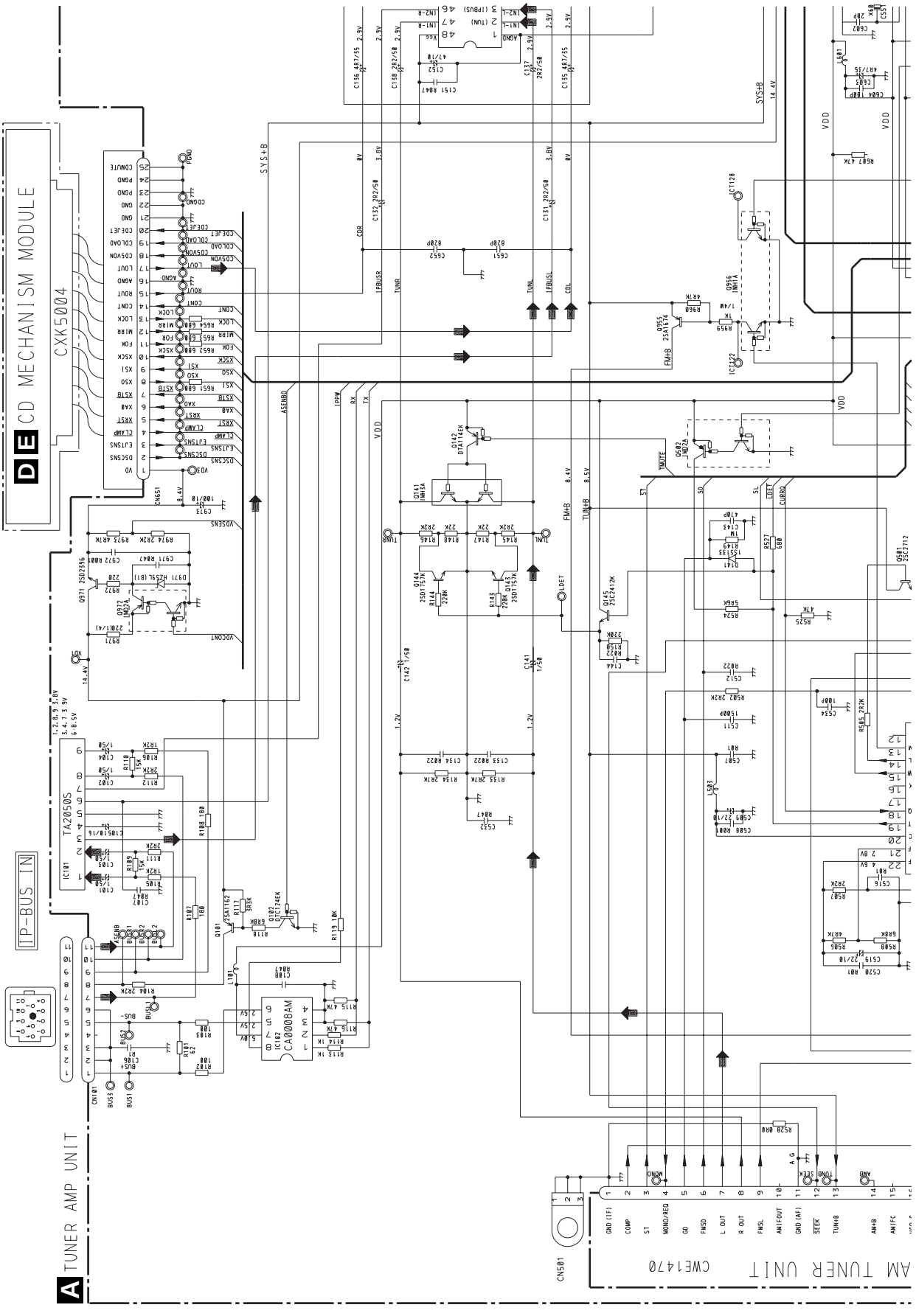
Fig. 7

B

C

D

A-b
A-a


CD MECHANISM MODULE
CXK5004
TUNER AMP UNIT
TP-BUS IN
TA2050S
CA0008AM
AM TUNER UNIT
CWE1470
CN501
SYS+B
VDD
TUNER
FM/AM
ANT
GND (IF)
COMP
ST
MONO/REQ
GD
FMSD
L OUT
R OUT
FMSL
AM/IFOUT
GND (AF)
SEEK
TUN+B
AM+B
AM/FC

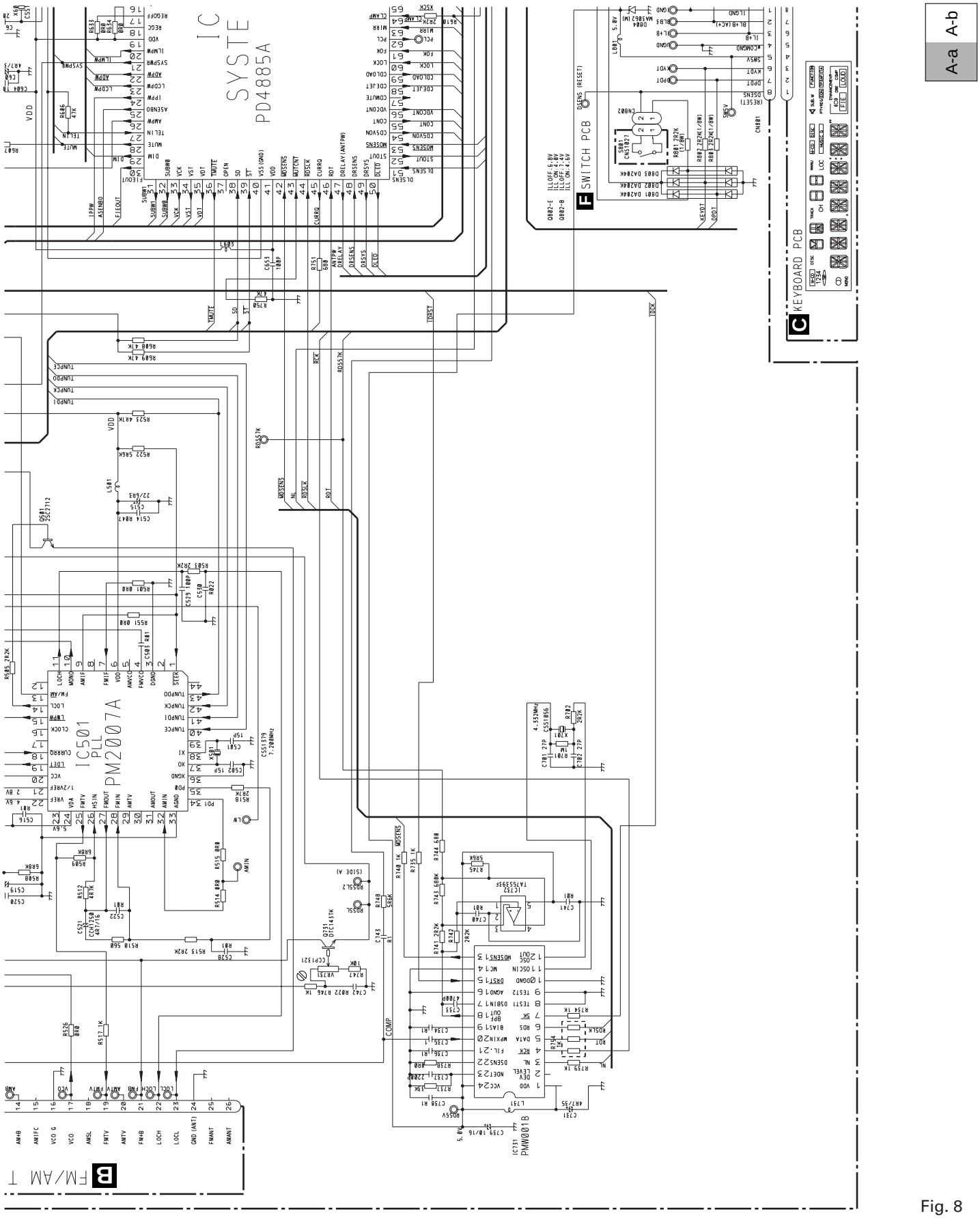
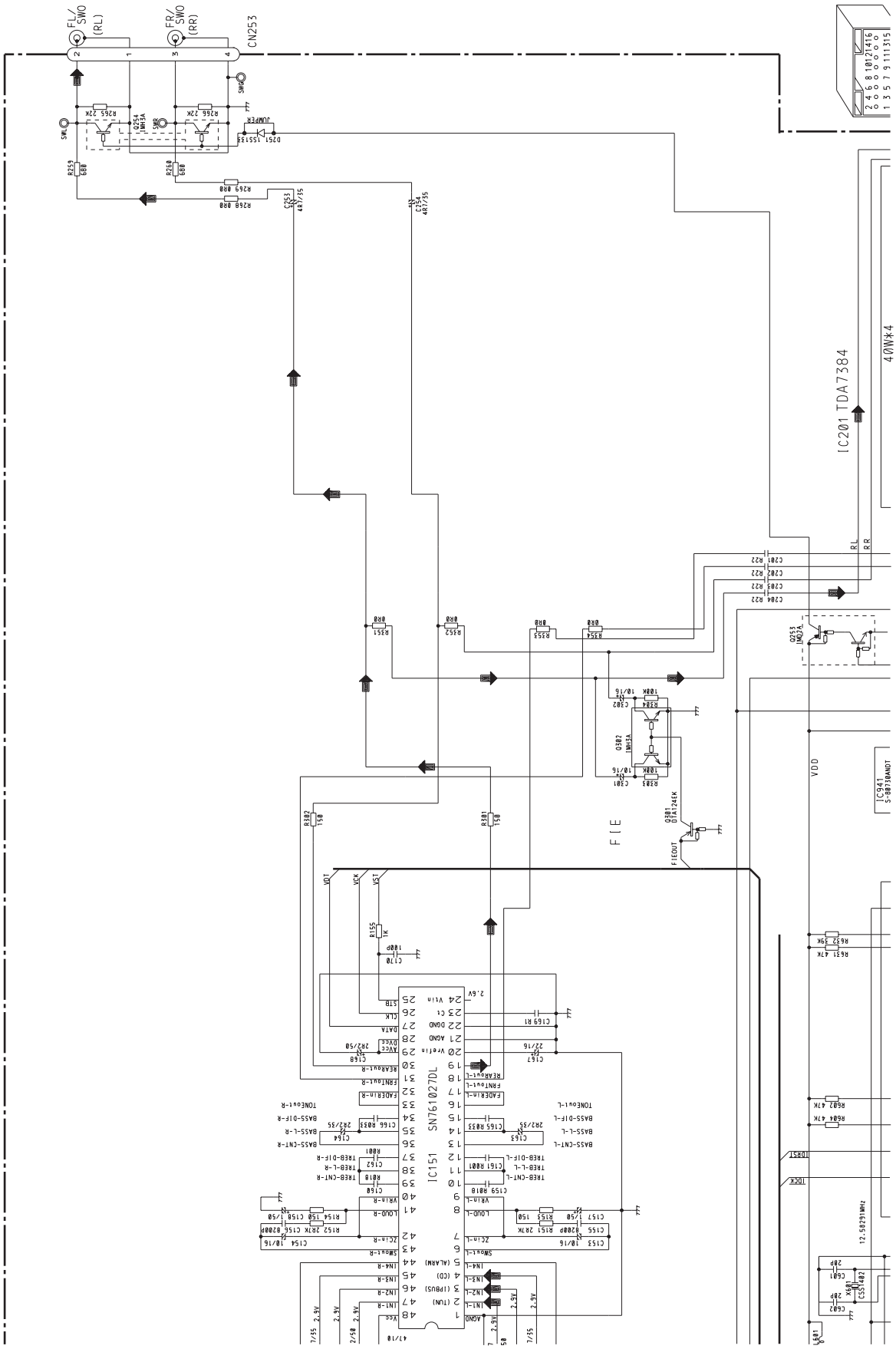
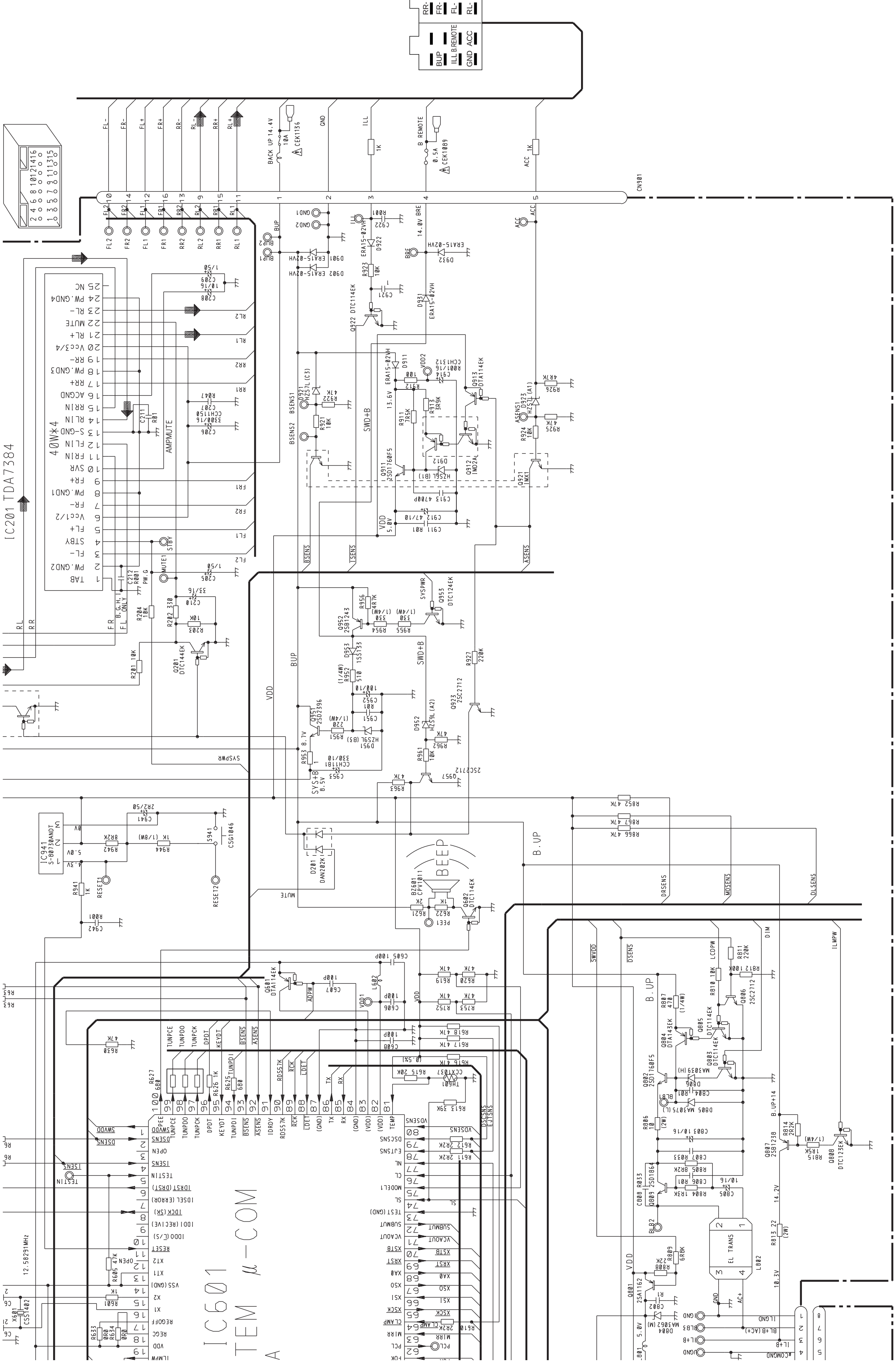

A-a A-b
SYSTEM IC
PD4885A
SWITCH PCB
KEYBOARD PCB
FM/AM T
IC501
PLL
PM2007A
PMW001B

Fig. 8


CN253
IC201 TDA7384
IC151 SN761027DL
IC941 S-8813BANDT
VDD
F I E
FIEOUT
12.5825MHz

A-a A-b



NOTE :

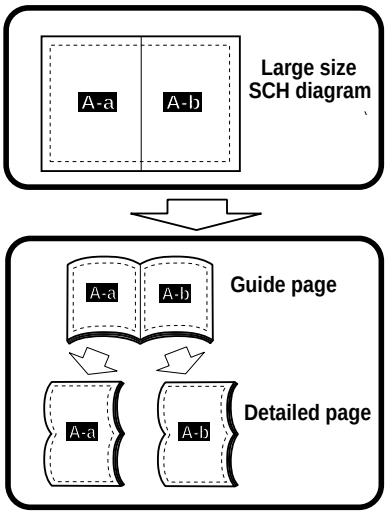
- Symbol indicates a resistor. No differentiation is made between chip resistors and discrete resistors.
- Symbol indicates a capacitor. No differentiation is made between chip capacitors and discrete capacitors.

Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022

The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

Fig. 9

3.3 CD MECHANISM MODULE(GUIDE PAGE)



D-a

SERVICE PICKUP UNIT(CXX1230)

D CONTROL UNIT

HOLOGRAM UNIT
FOCUS ACT.
TRACKING ACT.

SIGNAL LINE
FOCUS SERVO LINE
TRACKING SERVO LINE
CARRIAGE SERVO LINE
SPINDLE SERVO LINE

RF AMP/AUTO POWER CONTROL
IC101 UPC2572GS
REFO
5VA
AGND
IC301 BA6997FM
CD DRIVER
REGULATOR
LOADING DRIVER
IC302 BA6285FP
MGND
V+5
GND

E PHOTO UNIT
SPINDLE M1 CXA8912
CARRIAGE M2 CXA8986
LOADING M3 CXA8702

SWITCHES:
CONTROL UNIT
S801:HOME SWITCH·····ON-OFF
S802:CLAMP SWITCH·····ON-OFF
The underlined indicates the switch position.

A

B

C

D

D-b

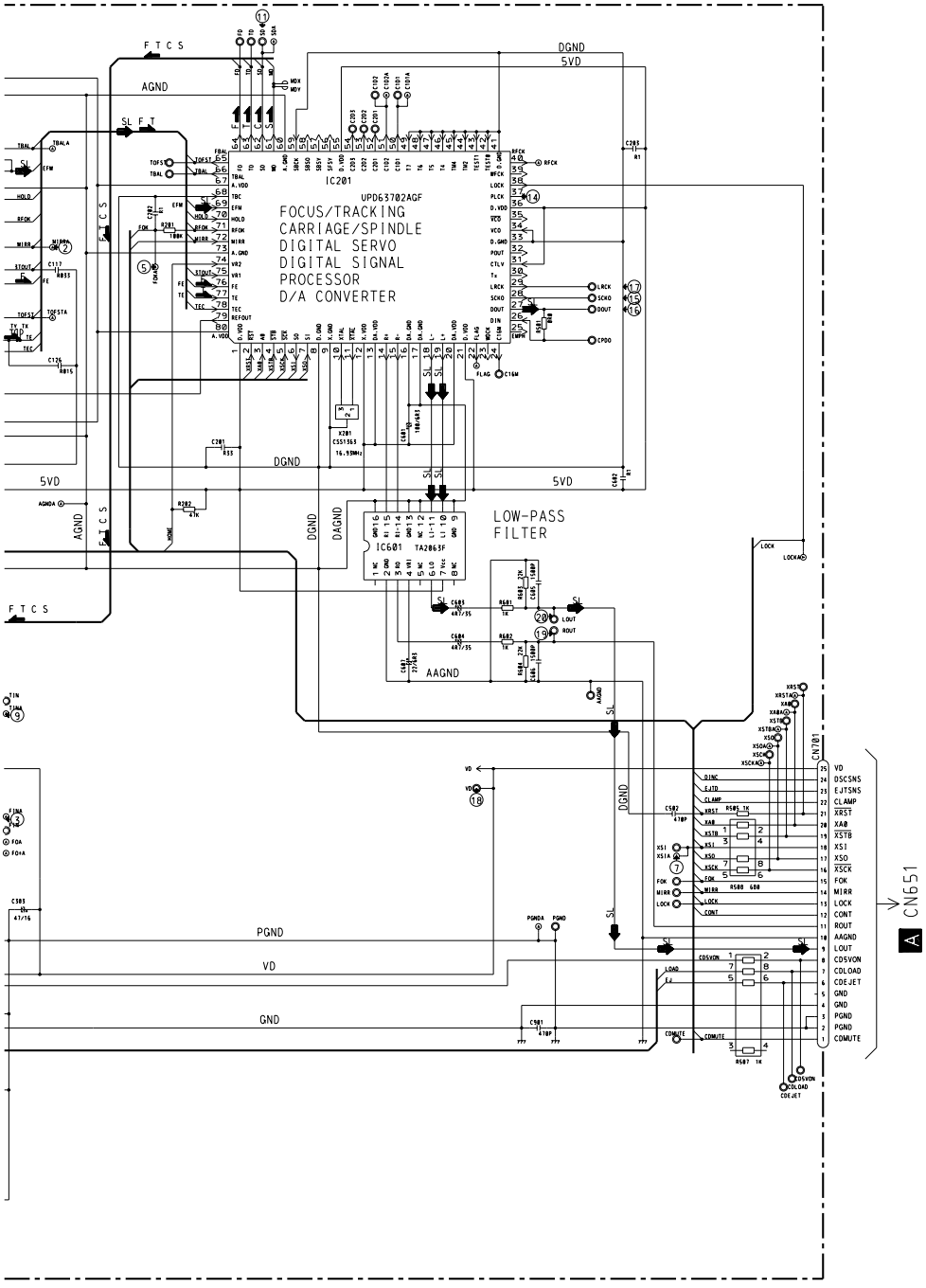
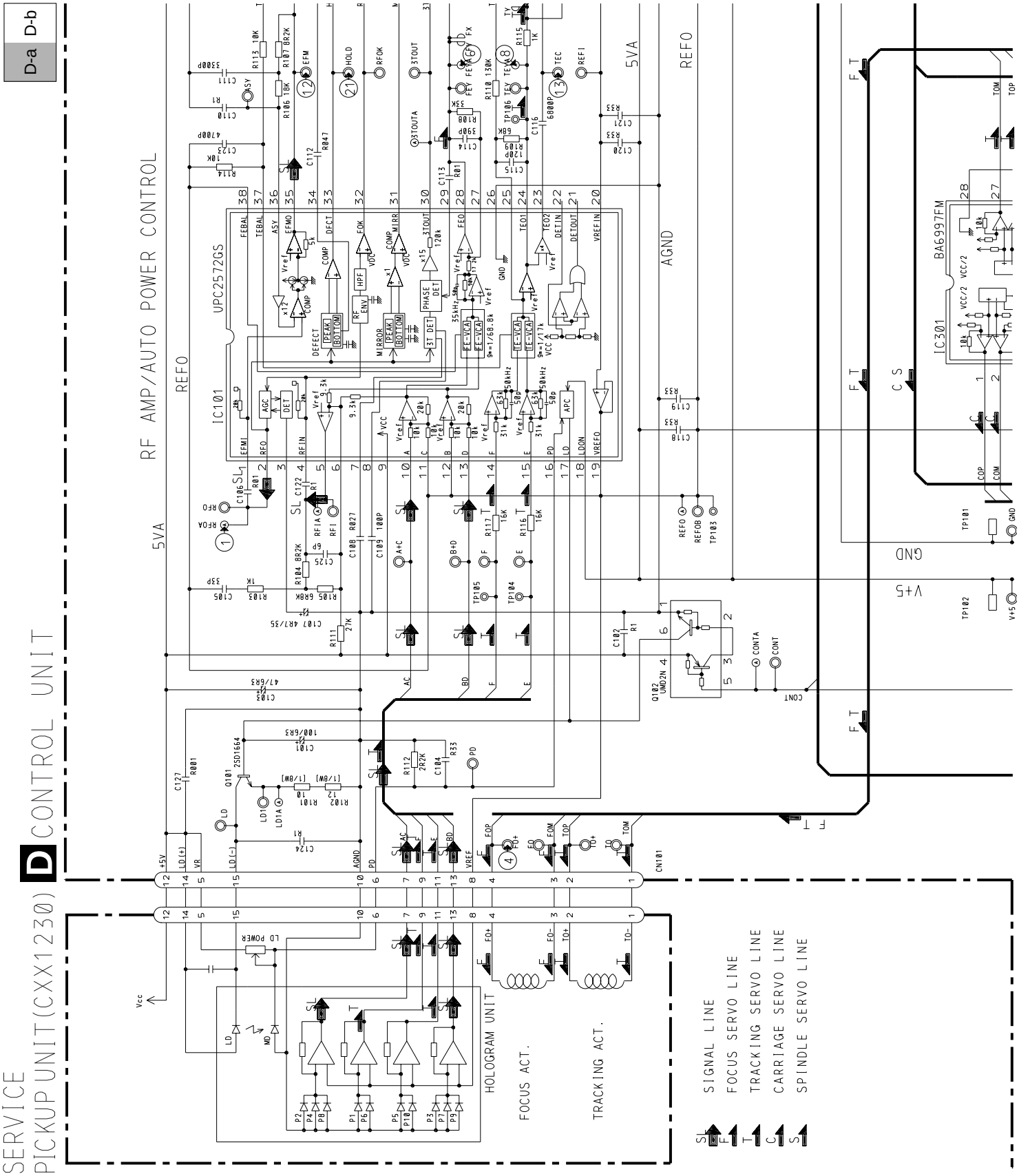


Fig. 10


D-a
D-b
D CONTROL UNIT
RF AMP/AUTO POWER CONTROL
IC101
UPC2572GS
IC301
BA6997FM
5VA
REFO
AGND
GND
V+5
SERVICE
PICKUP UNIT(CXX1230)
HOLOGRAM UNIT
FOCUS ACT.
TRACKING ACT.
LD POWER
SIGNAL LINE
FOCUS SERVO LINE
TRACKING SERVO LINE
CARRIAGE SERVO LINE
SPINDLE SERVO LINE

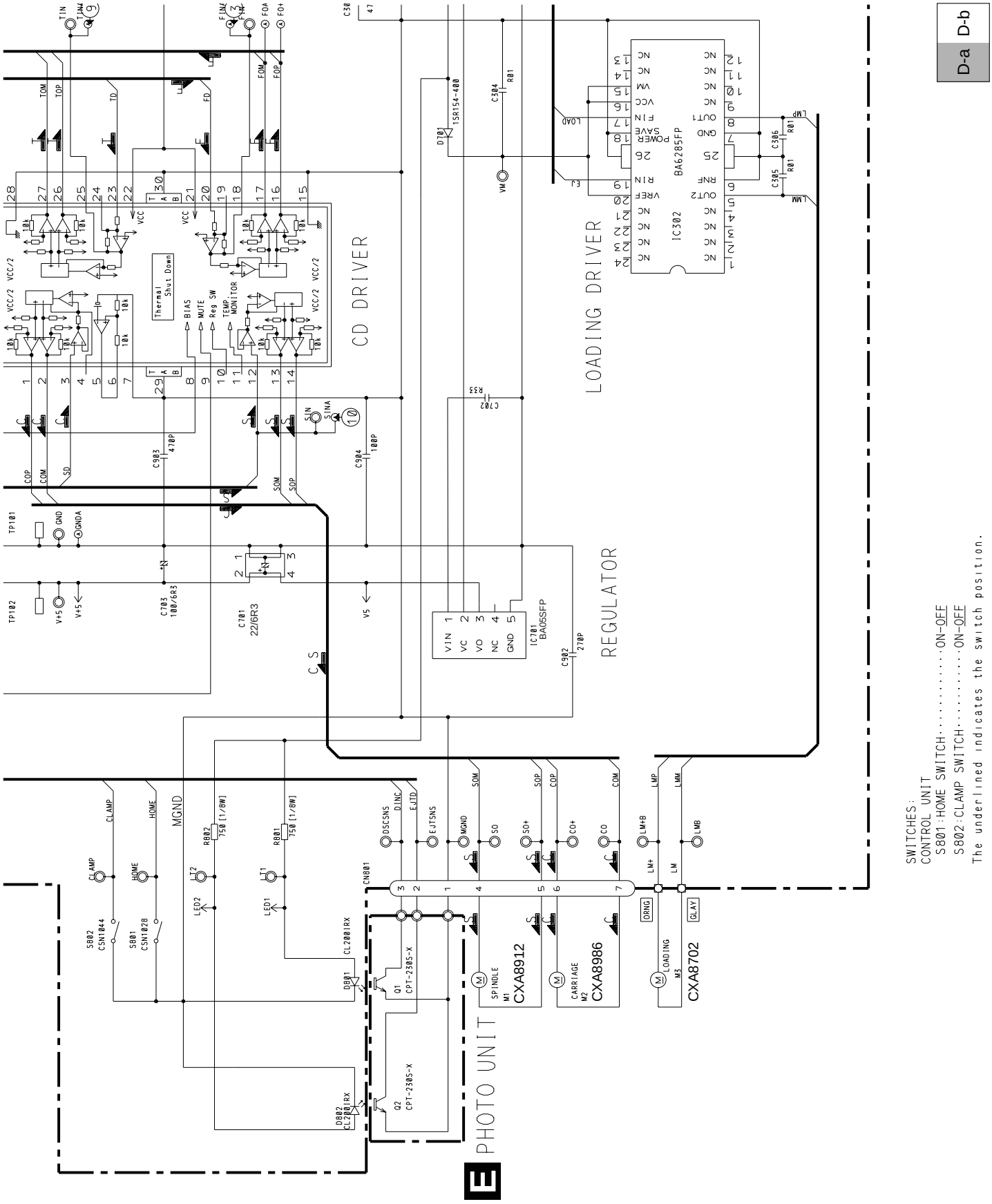
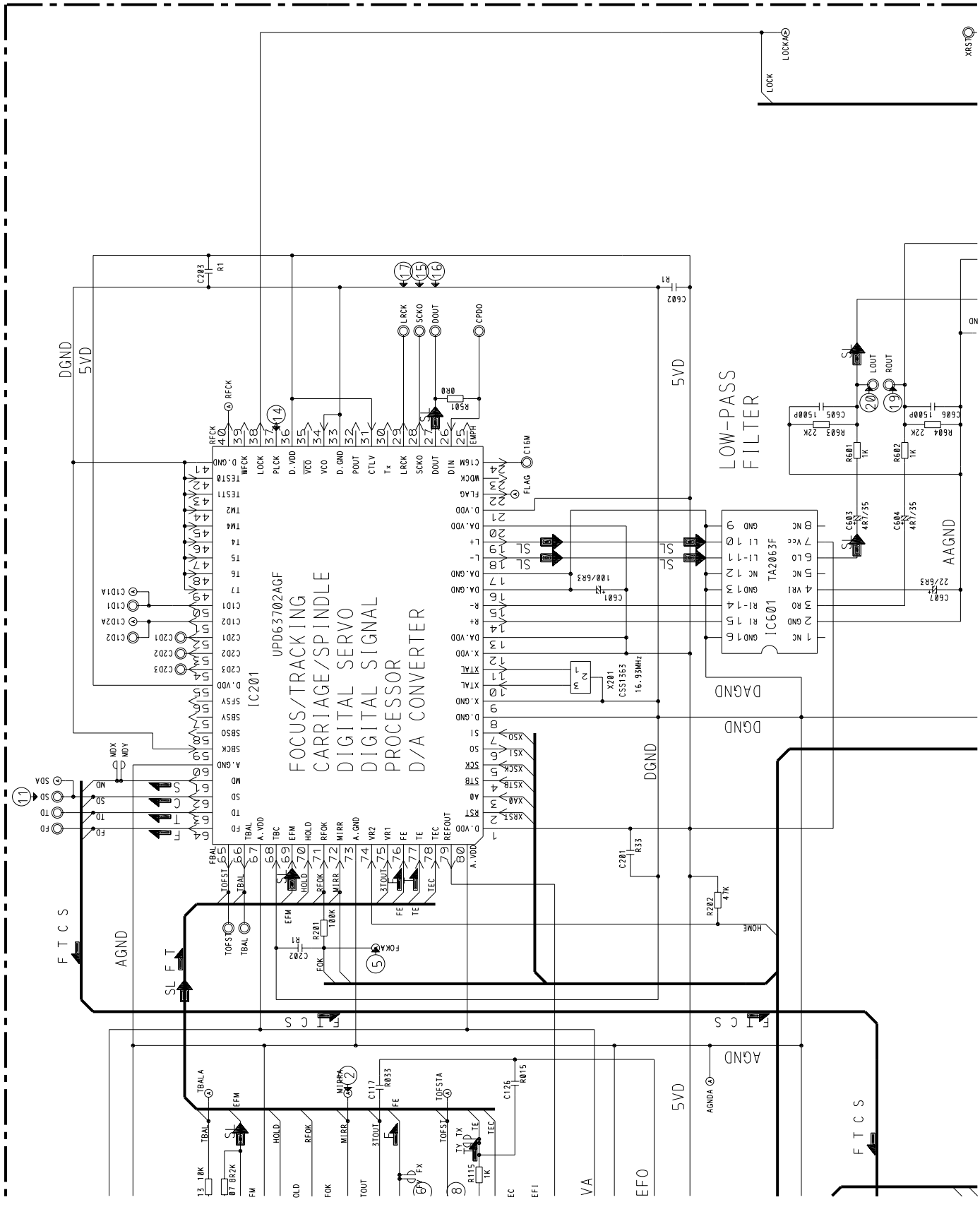

CD DRIVER
LOADING DRIVER
REGULATOR
PHOTO UNIT
IC302 BA6285FP
IC701 BA05SFP
CXA8912
CXA8986
CXA8702
SWITCHES:
CONTROL UNIT
S801:HOME SWITCH·····ON-OFF
S802:CLAMP SWITCH·····ON-OFF
The underlined indicates the switch position.

Fig. 11


D-a D-b
FOCUS/TRACKING
CARRIAGE/SPINDLE
DIGITAL SERVO
DIGITAL SIGNAL
PROCESSOR
D/A CONVERTER
UPD63702AGF
IC201
LOW-PASS
FILTER
IC601 TA2063F
X201
CS51363
16.93MHz
DGND
5VD
AGND
AAGND
DAGND
LOCK
LOCKA
XRST
LRCK
SCKO
DOUT
CPDO
RFCK
EMPH
FLAG
C16M
LOUT
ROUT
HOME
FOKA
TOFSTA
MIRRA
TBALA
SLFT
FTCS

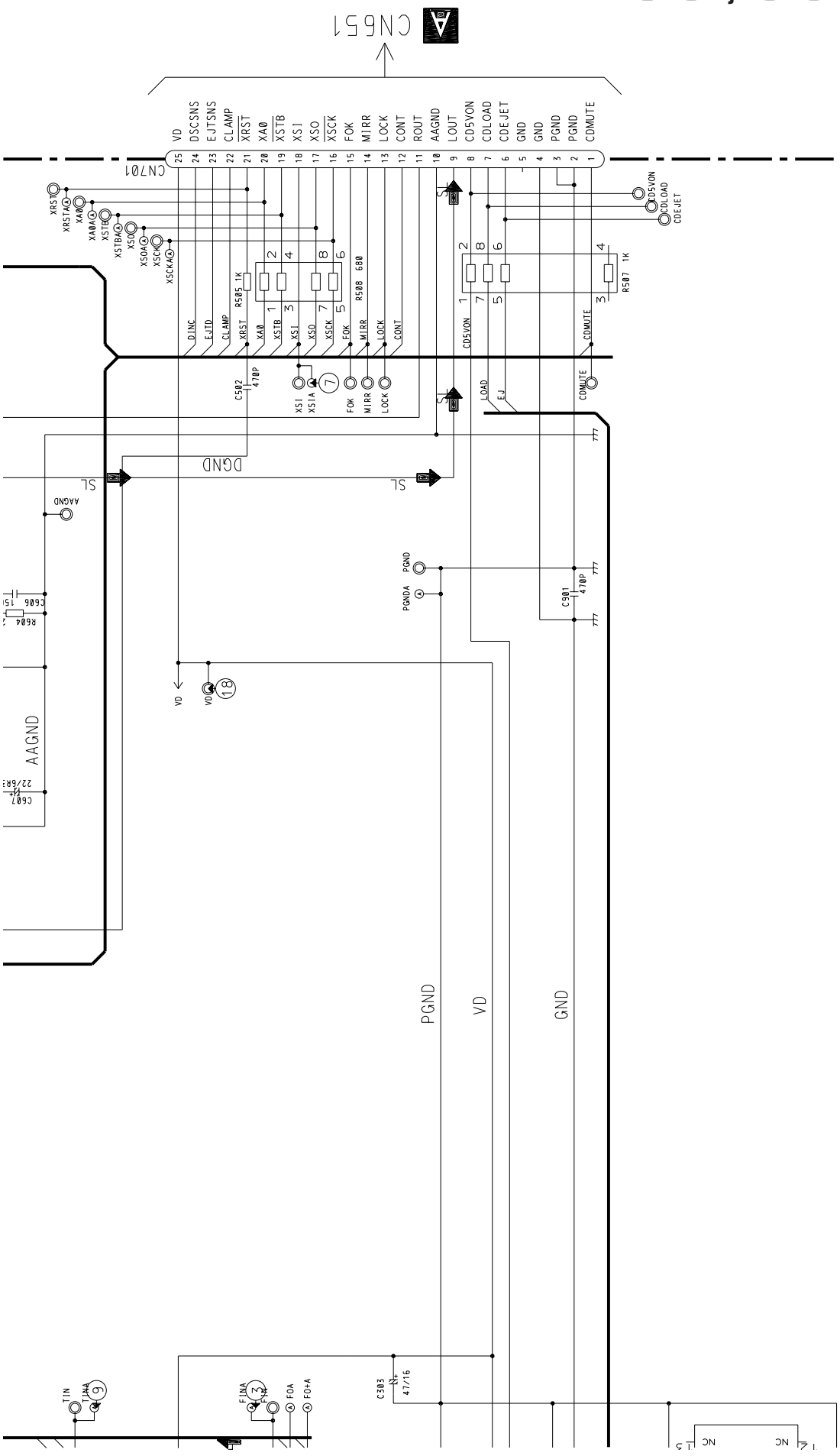
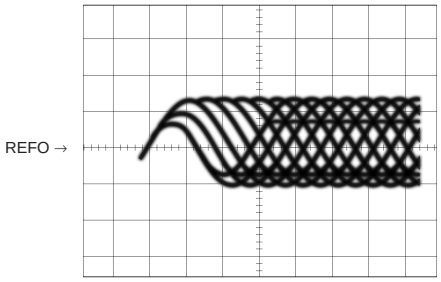

CN651
CN701
VD
DSCSNS
EJTSNS
CLAMP
XRST
XA0
XSTB
XSI
XSO
XSCK
FOK
MIRR
LOCK
CONT
ROUT
AAGND
LOUT
CD5VON
CDLOAD
CDEJET
GND
PGND
CDMUTE
DINC
EJTD
R505 1K
R508 680
R507 1K
C502 470P
C901 470P
C303 47/16
DGND
SL
AAGND
PGND
VD
GND
LOAD
EJ
TIN
TINA
FINA
FIN
FOA
FO+A
NC

Fig. 12

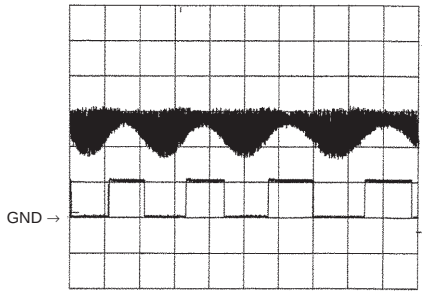
Note:1. The encircled numbers denote measuring pointes in the circuit diagram.
2. Reference voltage
REFO:2.5V

● Waveforms

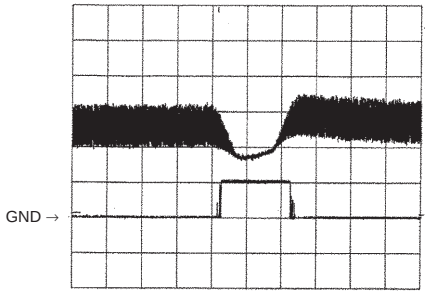
① RFO 0.5V/div. 0.5µs/div.
Normal mode: play



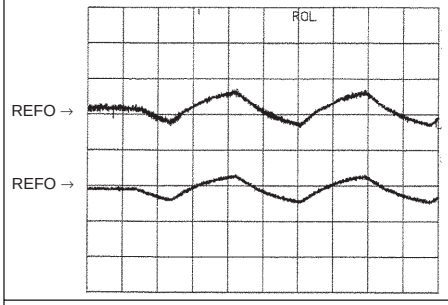
① CH1: RFO 1V/div. 0.5ms/div.
② CH2: MIRR 5V/div.
Test mode: Tracking open



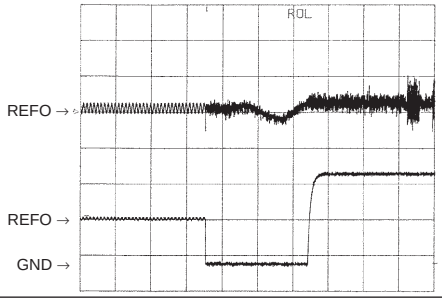
① CH1: RFO 1V/div. 0.5ms/div.
② CH2: MIRR 5V/div.
Normal mode: The defect part passes 800µm



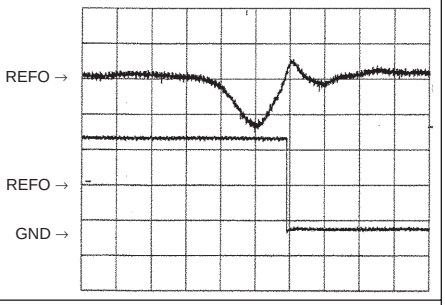
③ CH1: FIN 0.5V/div. 0.2s/div.
④ CH2: FO+ 2V/div.
Test mode: No disc, Focus close



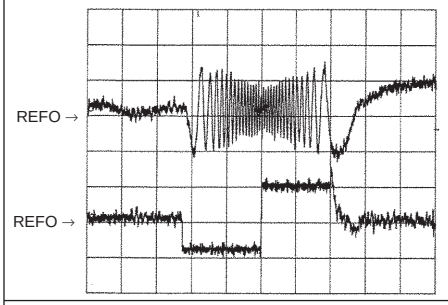
③ CH1: FIN 0.5V/div. 0.2s/div.
⑤ CH2: FOK 2V/div.
Normal mode: Focus close



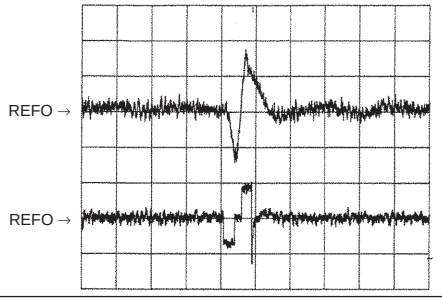
⑥ CH1: FEY 0.5V/div. 1ms/div.
⑦ CH2: XSI 2V/div.
Normal mode: Focus close



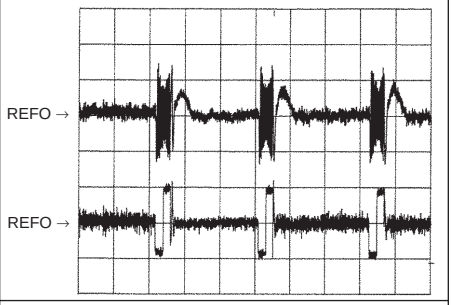
⑧ CH1: TEY 0.5V/div. 0.5ms/div.
⑨ CH2: TIN 0.5V/div.
Test mode: 32 tracks jump (FWD)



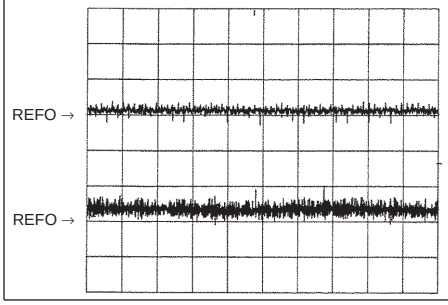
⑧ CH1: TEY 0.5V/div. 0.5ms/div.
⑨ CH2: TIN 0.5V/div.
Test mode: Single jump (FWD)



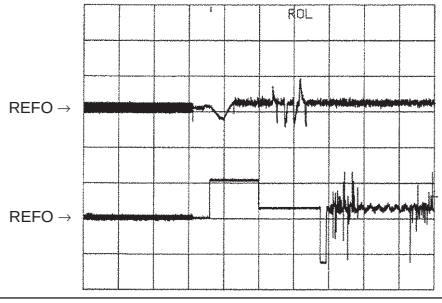
⑧ CH1: TEY 0.5V/div. 5ms/div.
⑨ CH2: TIN 0.5V/div.
Test mode: 100 tracks jump (FWD)



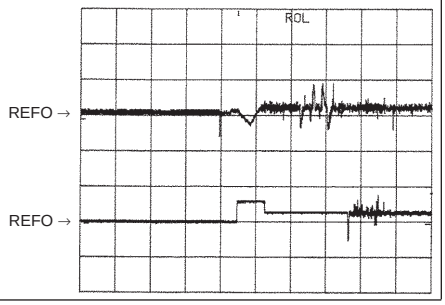
⑥ CH1: FEY 0.1V/div. 20ms/div.
③ CH2: FIN 0.2V/div.
Normal mode: Play



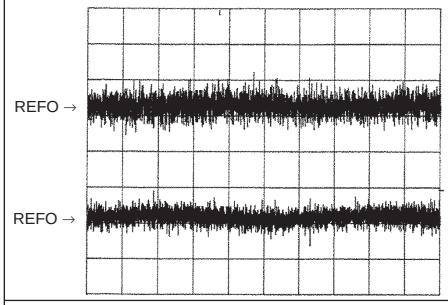
③ CH1: FIN 0.5V/div. 0.5s/div.
⑩ CH2: SIN 1V/div.
Normal mode: Focus close (12cm)



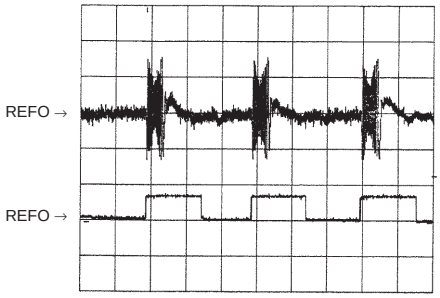
③ CH1: FIN 0.5V/div. 0.5s/div.
⑩ CH2: SIN 1V/div.
Normal mode: Focus close (8cm)



⑧ CH1: TEY 0.2V/div. 20ms/div.
⑨ CH2: TIN 0.2V/div.
Normal mode: play

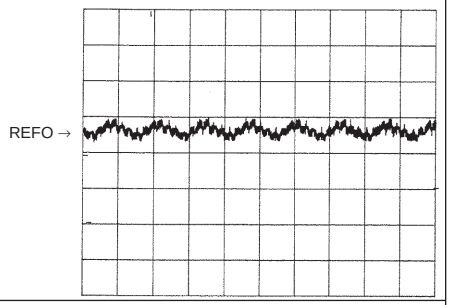


⑧ CH1: TEY 0.5V/div. 5ms/div.
⑪ CH2: SD 0.5V/div.



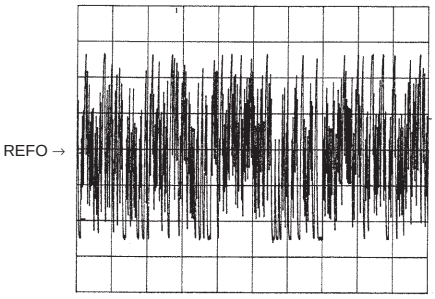
⑩ SIN 0.5V/div. 0.1s/div.

Normal mode: Play (12cm)



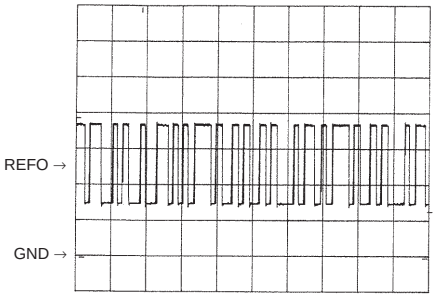
⑩ SIN 0.5V/div. 10ms/div.

Long Search (12cm)

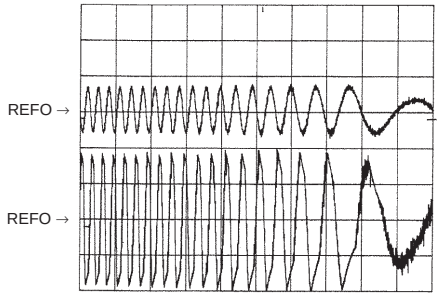


⑫ EFM 1V/div. 5µs/div.

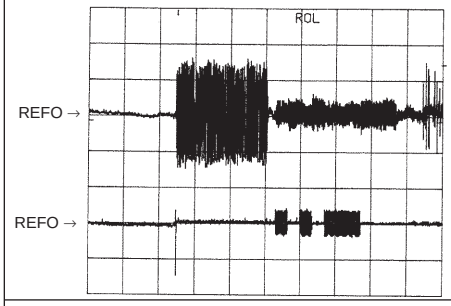
Play



⑧ CH1: TEY 1V/div. 2ms/div.
⑬ CH2: TEC 1V/div.
Test mode: Focus close
Tracking open

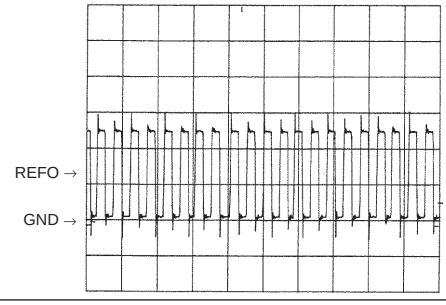


⑧ CH1: TEY 0.5V/div. 0.2s/div.
⑥ CH2: FEY 0.5V/div.
Normal mode: AGC after focus close



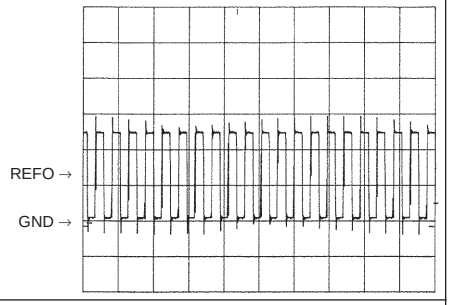
⑭ PLCK 2V/div. 0.5µs/div.

Play



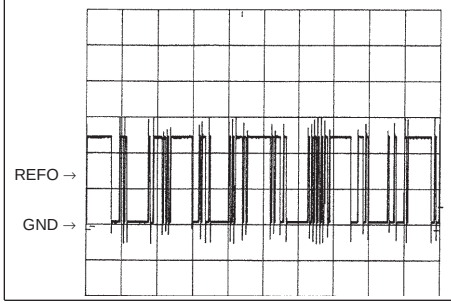
⑮ SCKO 2V/div. 1µs/div.

Play

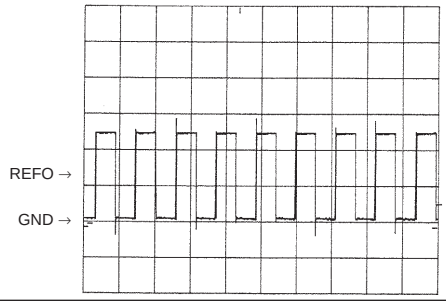


⑯ Dout 2V/div. 10µs/div.

Play

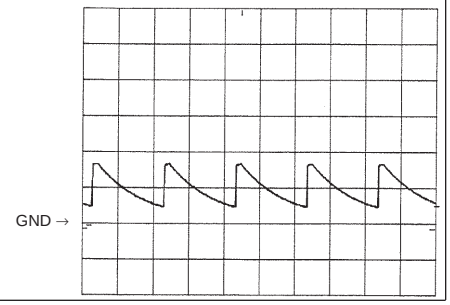


⑰ LRCK 2V/div. 20µs/div.

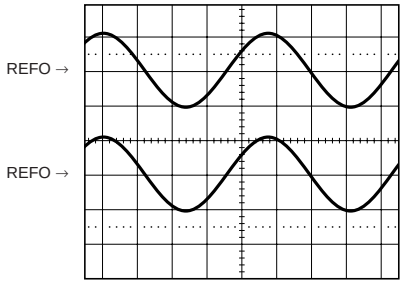


⑱ VD 5V/div. 50ms/div.

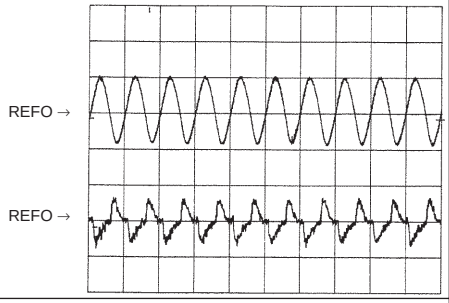
Normal mode: No disc



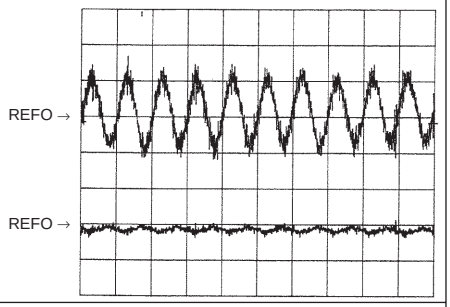
⑲ CH1: R OUT 1V/div.
⑳ CH2: L OUT 1V/div.
0.2ms/div.
Normal mode: Play (1kHz 0dB)



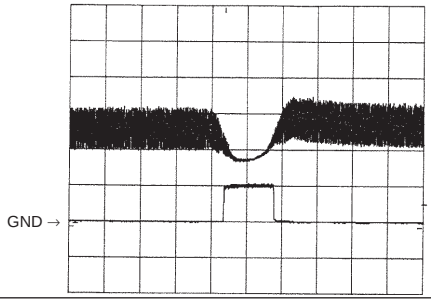
⑥ CH1: FEY 0.2V/div.
③ CH2: FIN 0.5V/div.
1ms/div.
Normal mode: During AGC



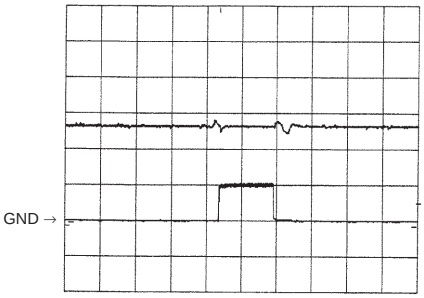
⑧ CH1: TEY 0.2V/div.
⑨ CH2: TIN 0.5V/div.
1ms/div.
Normal mode: During AGC



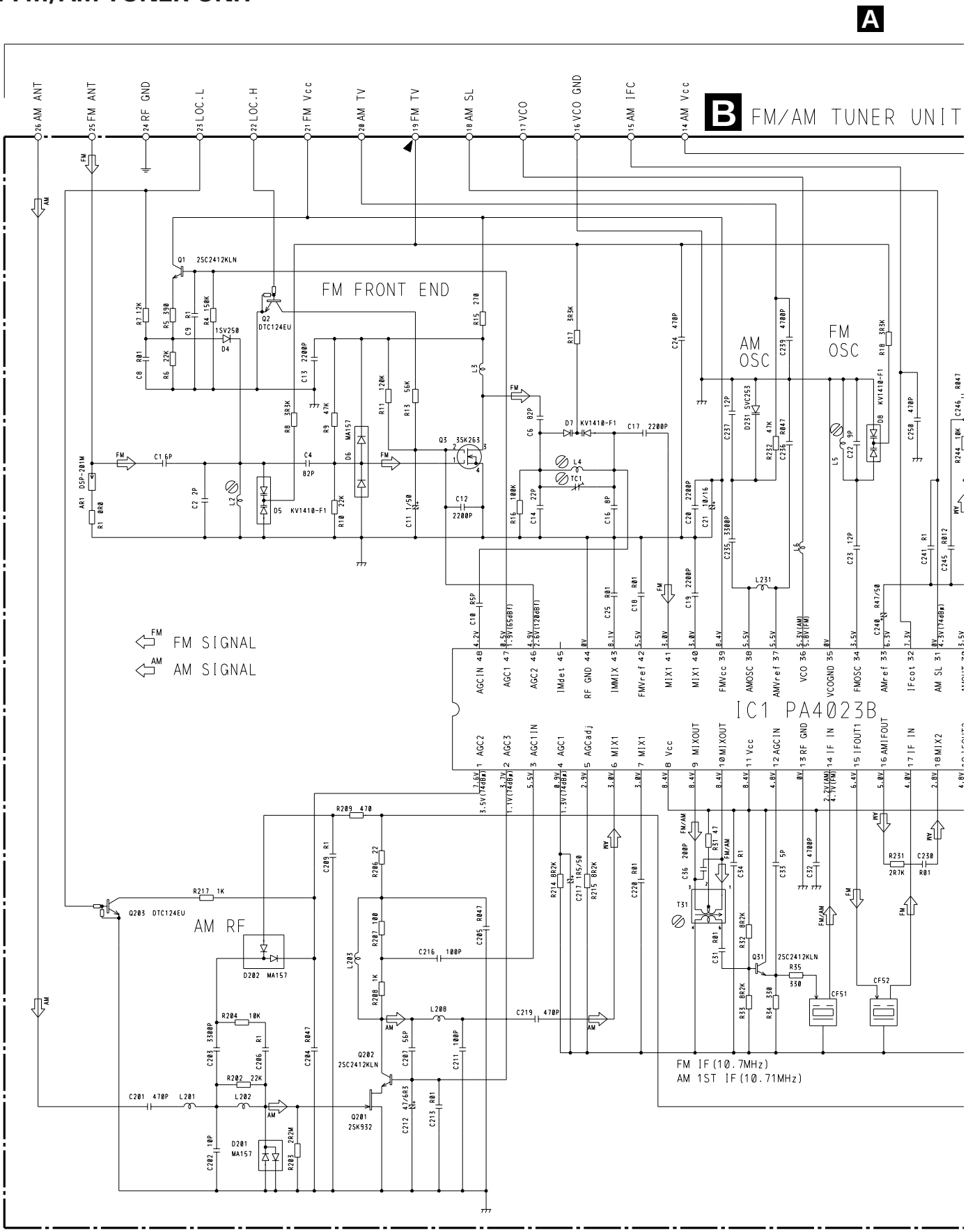
① CH1: RFO 1V/div.
㉑ CH2: HOLD 5V/div.
0.5ms/div.
Normal mode: The defect part passes 800µm

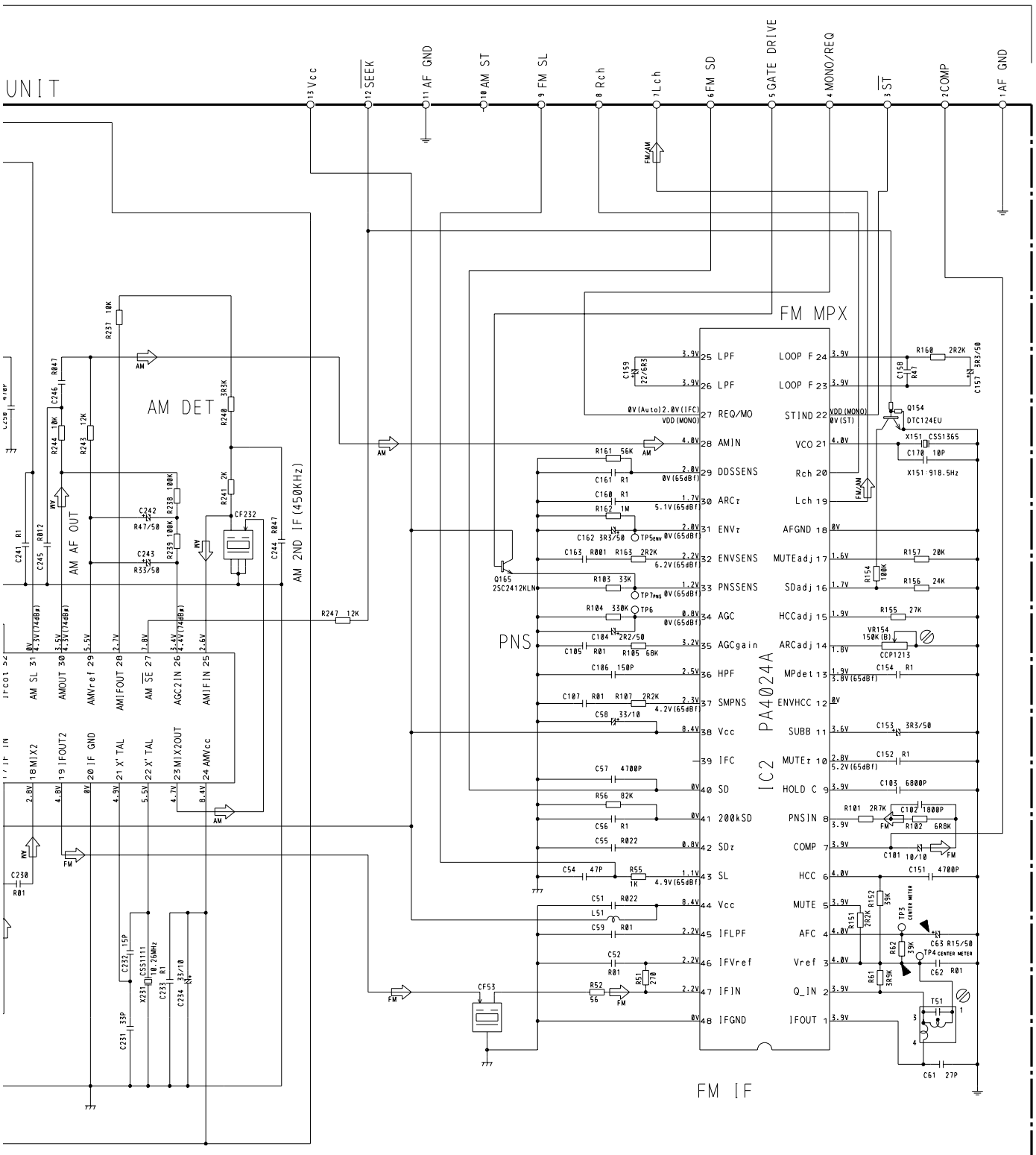


③ CH1: FIN 1V/div.
㉑ CH2: HOLD 5V/div.
0.5ms/div.
Normal mode: The defect part passes 800µm

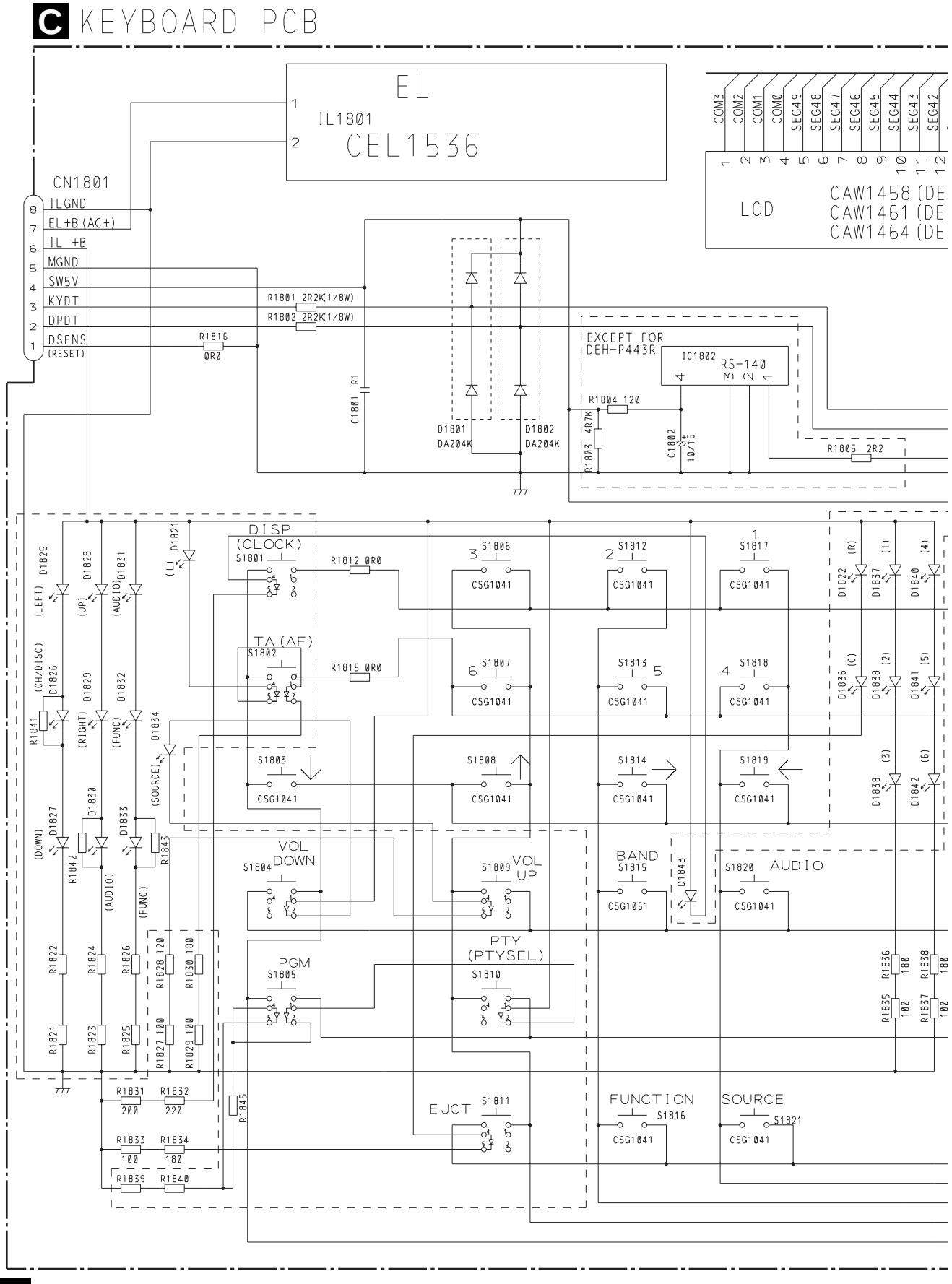


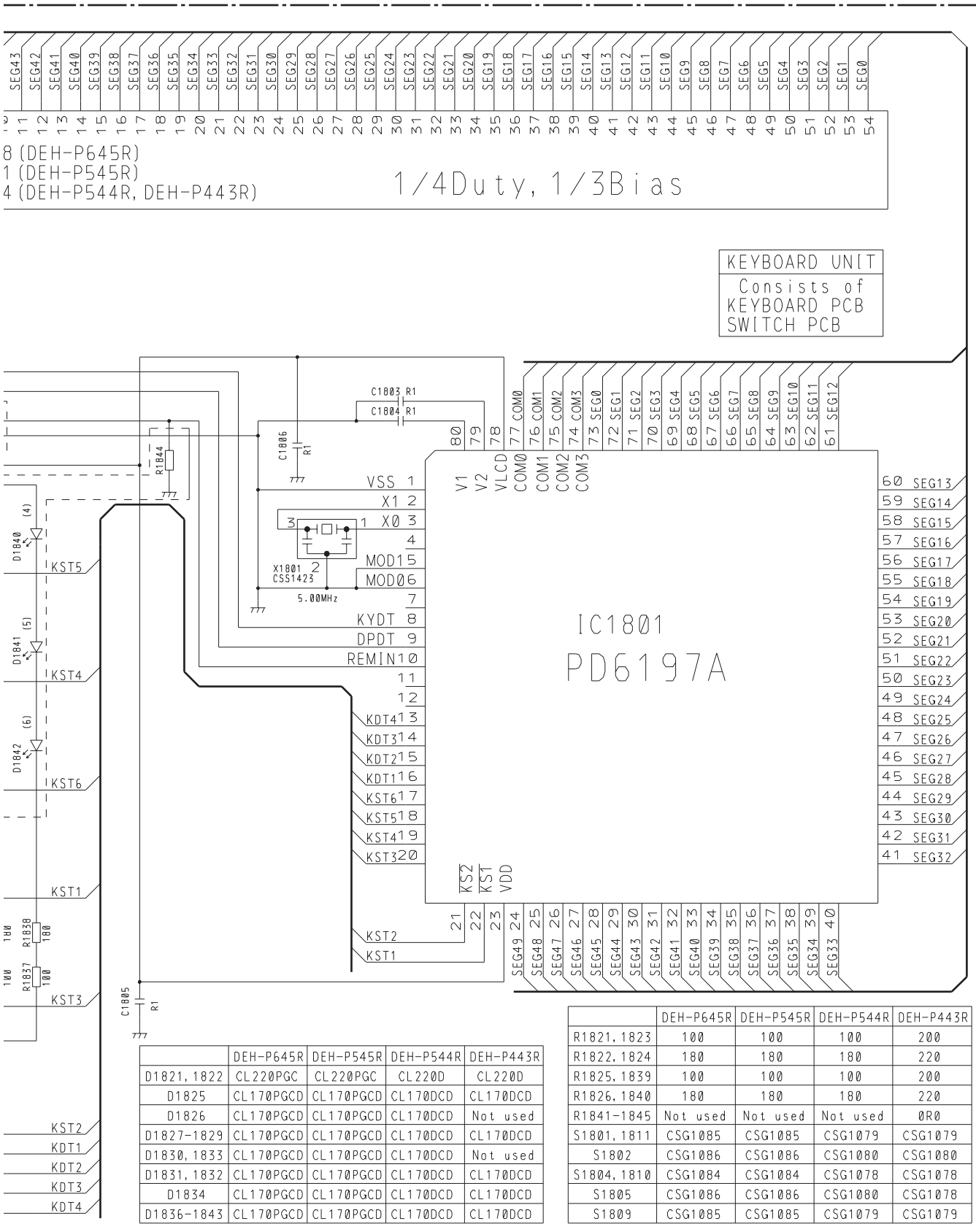
3.4 FM/AM TUNER UNIT




UNIT
FM MPX
AM DET
AM AF OUT
AM 2ND IF (450KHz)
PNS
IC2 PA4024A
FM IF
LOOP F 24
LOOP F 23
STIND 22
VCO 21
Rch 20
Lch 19
AFGND 18
MUTEadj 17
SDadj 16
HCCadj 15
ARCadj 14
MPdet 13
ENVHCC 12
SUBB 11
MUTEr 10
HOLD C 9
PNSIN 8
COMP 7
HCC 6
MUTE 5
AFC 4
Vref 3
Q_IN 2
IFOUT 1
LPF
REQ/MO
AMIN
DDSSENS
ARCr
ENVr
ENVSENS
PNSSENS
AGC
AGCgain
HPF
SMPNS
Vcc
IFC
SD
200kSD
SDr
SL
Vcc
IFLPF
IFVref
IFIN
IFGND
Vcc
SEEK
AF GND
AM ST
FM SL
Rch
Lch
FM SD
GATE DRIVE
MONO/REQ
ST
COMP
AF GND
AM SL
AMOUT
AMVref
AMIFOUT
AM SE
AGC2IN
AMIFIN
MIX2
IFOUT2
IF GND
X'TAL
X'TAL
MIX2OUT
AMVcc
Q165 2SC2412KLN
Q154 DTC124EU
X151 CSS1365
X151:918.5Hz
CF232
CF53
X231 CSS1111
T51

3.5 KEYBOARD PCB





	DEH-P645R	DEH-P545R	DEH-P544R	DEH-P443R
D1821, 1822	CL220PGC	CL220PGC	CL220D	CL220D
D1825	CL170PGCD	CL170PGCD	CL170DCD	CL170DCD
D1826	CL170PGCD	CL170PGCD	CL170DCD	Not used
D1827-1829	CL170PGCD	CL170PGCD	CL170DCD	CL170DCD
D1830, 1833	CL170PGCD	CL170PGCD	CL170DCD	Not used
D1831, 1832	CL170PGCD	CL170PGCD	CL170DCD	CL170DCD
D1834	CL170PGCD	CL170PGCD	CL170DCD	CL170DCD
D1836-1843	CL170PGCD	CL170PGCD	CL170DCD	CL170DCD

	DEH-P645R	DEH-P545R	DEH-P544R	DEH-P443R
R1821, 1823	100	100	100	200
R1822, 1824	180	180	180	220
R1825, 1839	100	100	100	200
R1826, 1840	180	180	180	220
R1841-1845	Not used	Not used	Not used	0R0
S1801, 1811	CSG1085	CSG1085	CSG1079	CSG1079
S1802	CSG1086	CSG1086	CSG1080	CSG1080
S1804, 1810	CSG1084	CSG1084	CSG1078	CSG1078
S1805	CSG1086	CSG1086	CSG1080	CSG1078
S1809	CSG1085	CSG1085	CSG1079	CSG1079

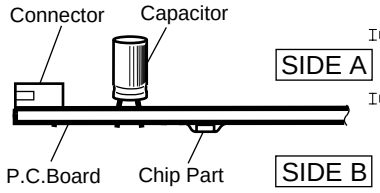
Fig. 14

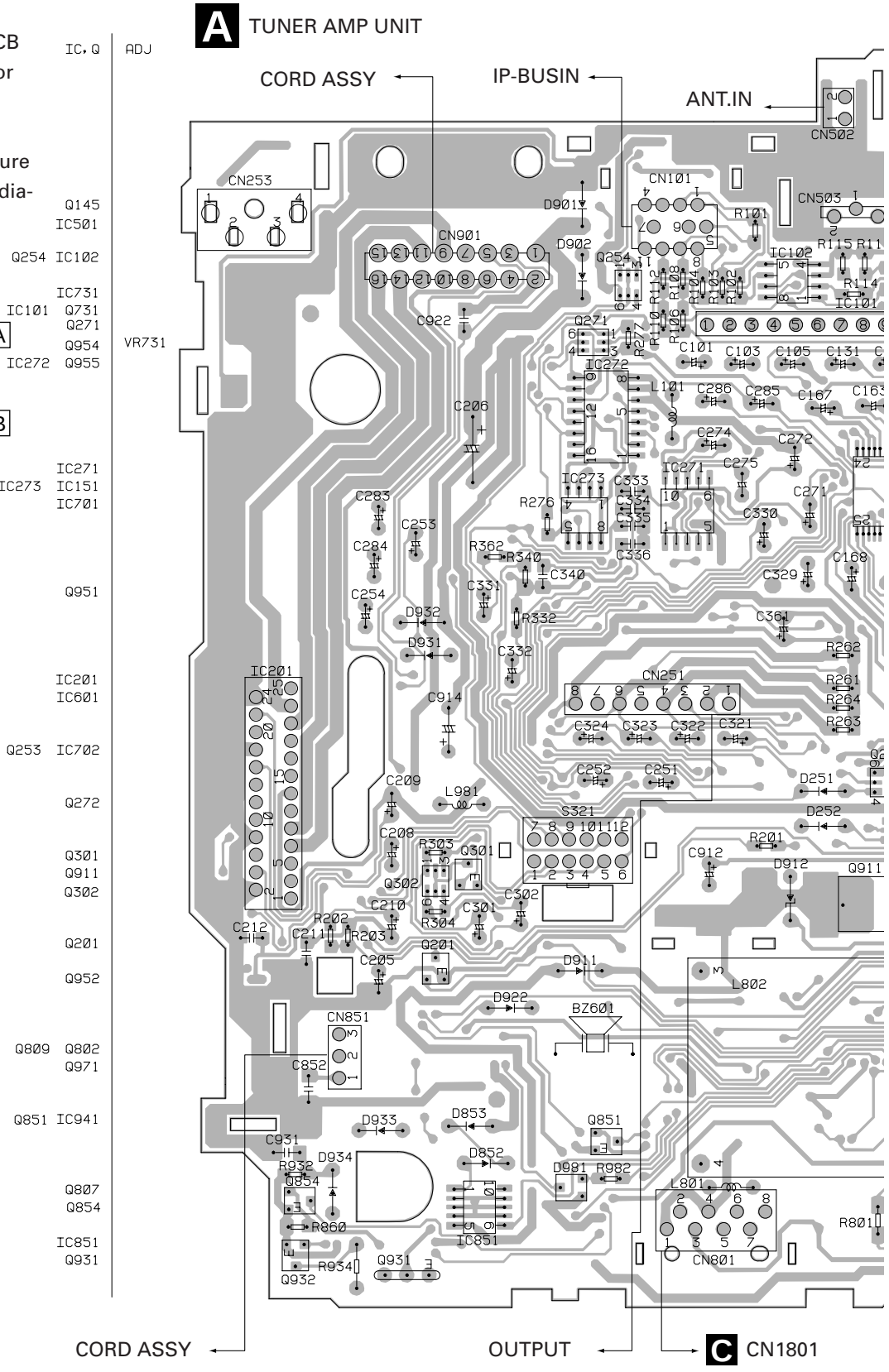
4. PCB CONNECTION DIAGRAM

4.1 TUNER AMP UNIT

NOTE FOR PCB DIAGRAMS

1. The parts mounted on this PCB include all necessary parts for several destination.
   For further information for respective destinations, be sure to check with the schematic diagram.
2. Viewpoint of PCB diagrams





SIDE A

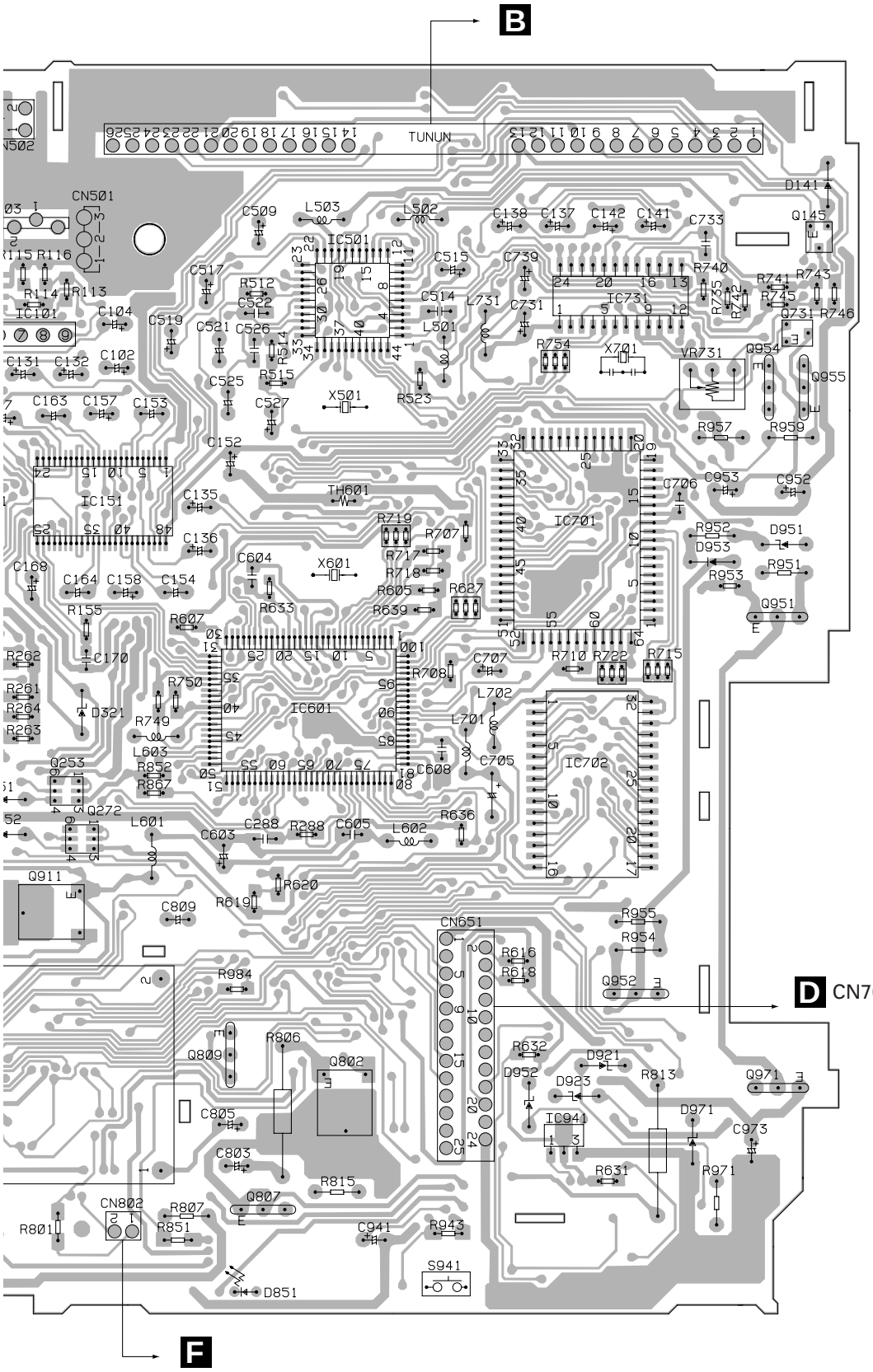
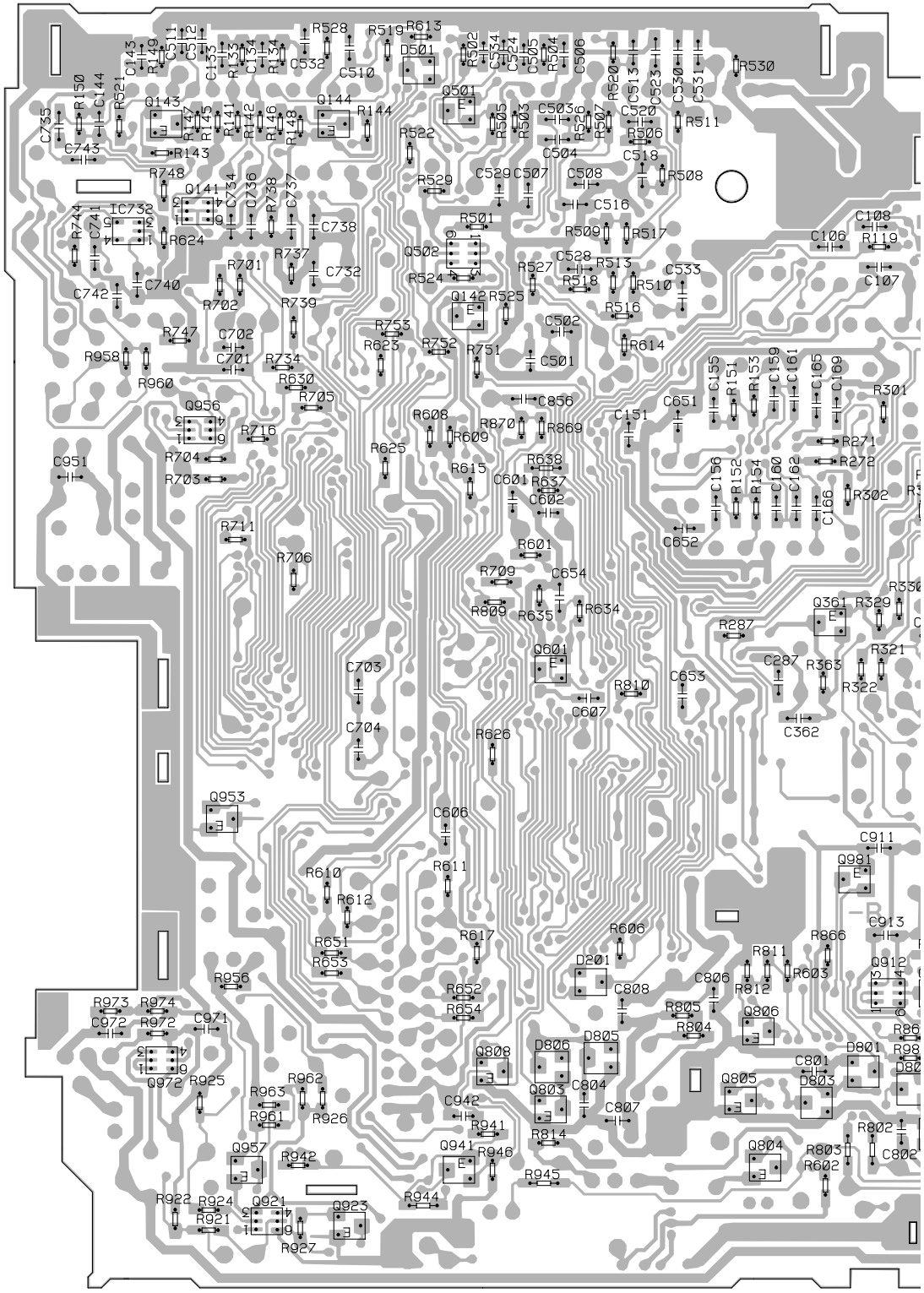
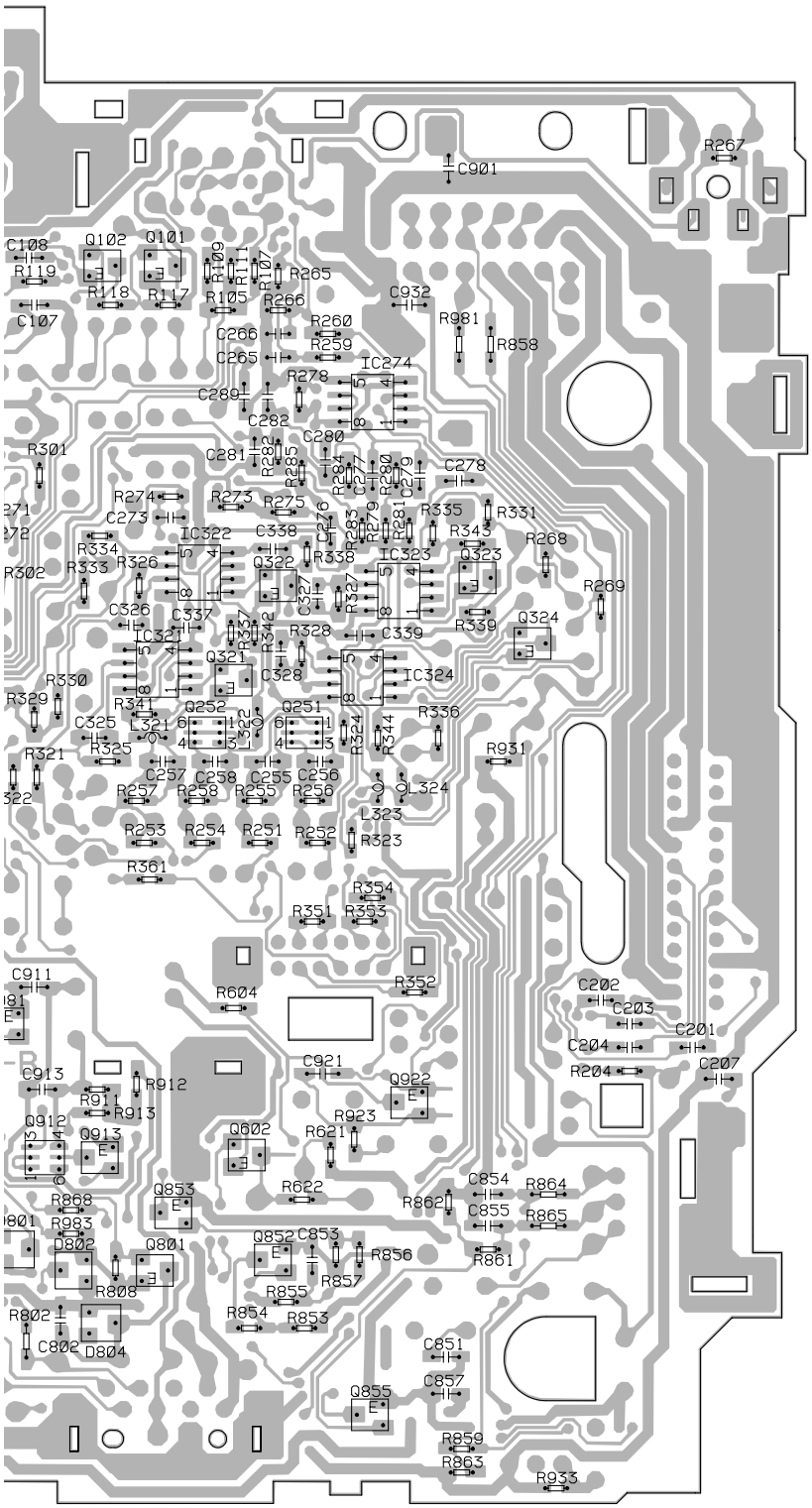

B
TUNUN
CN501
CN502
IC501
IC731
IC151
IC101
IC701
IC702
IC601
IC941
X501
X601
X701
TH601
L501
L502
L503
L601
L602
L603
L701
L702
L731
CN651
CN802
S941
D851
D921
D923
D951
D952
D953
D971
D141
Q145
Q731
Q911
Q951
Q952
Q954
Q955
Q971
VR731
D CN701
F

Fig. 15

A TUNER AMP UNIT



SIDE B



IC, Q

Q144 Q501
Q143

Q141

IC732 Q102
Q101
Q502

Q142

IC274

Q956

IC322
Q322 IC323
Q323

Q324
IC321
Q321 IC324

Q361 Q252
Q251
Q601

Q953

Q981

Q922

Q912 Q913
Q602
Q806
Q853

Q808 Q801 Q852
Q972 Q805
Q803

Q957 Q941
Q804
Q855
Q921 Q923

Q932

Fig. 16

4.2 FM/AM TUNER UNIT

SIDE A

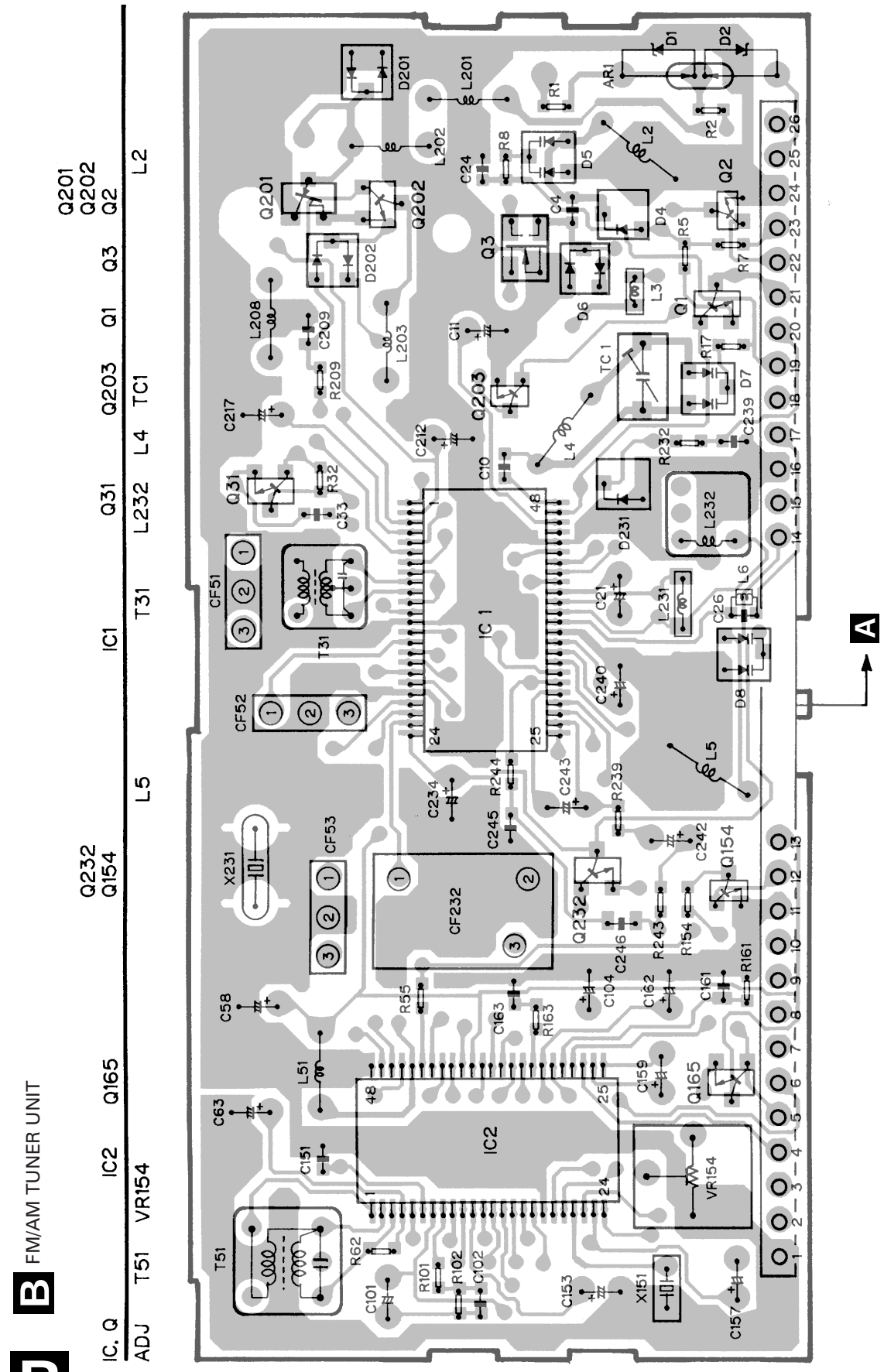
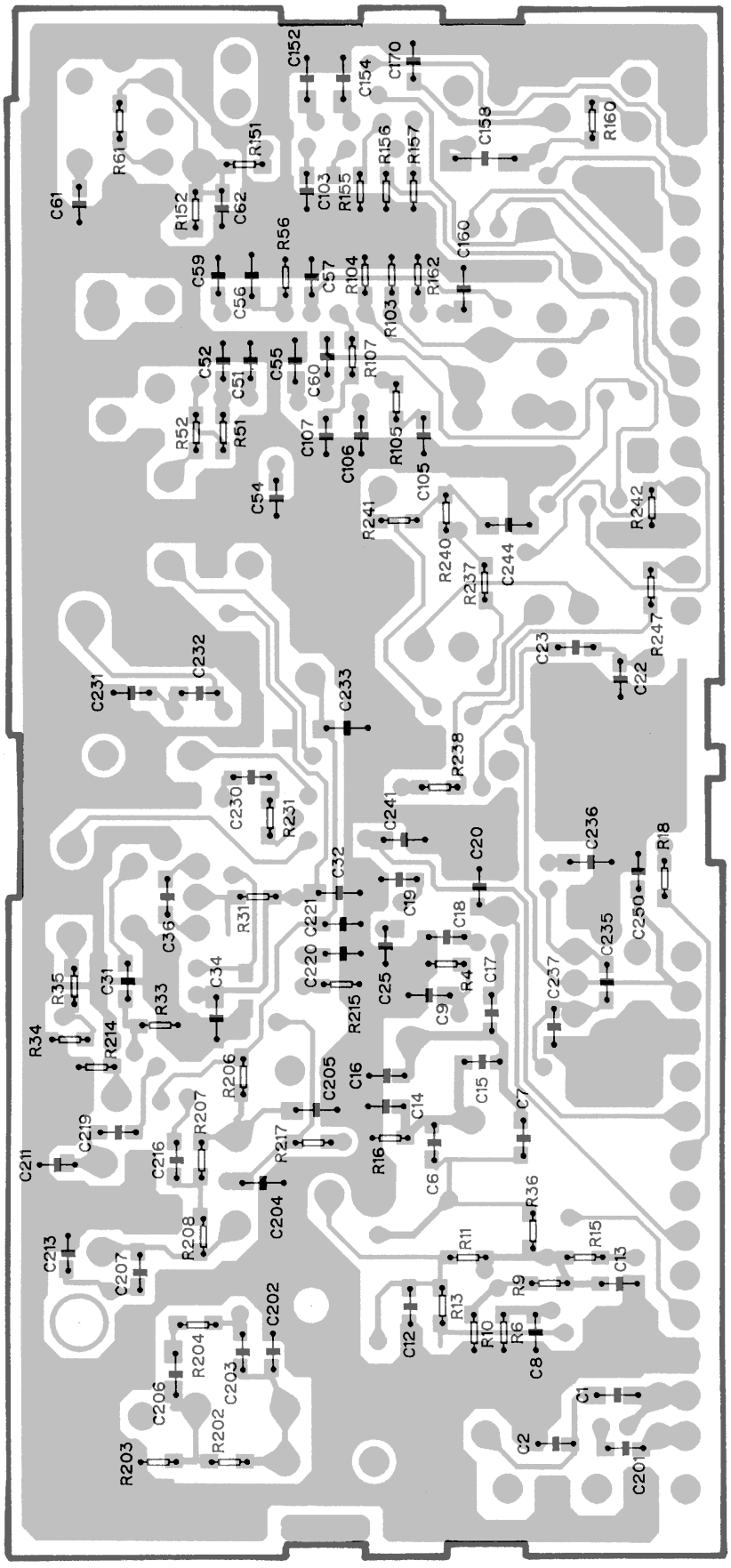


Fig. 17

SIDE B



B FM/AM TUNER UNIT

Fig. 18

4.3 CD MECHANISM MODULE

SIDE A

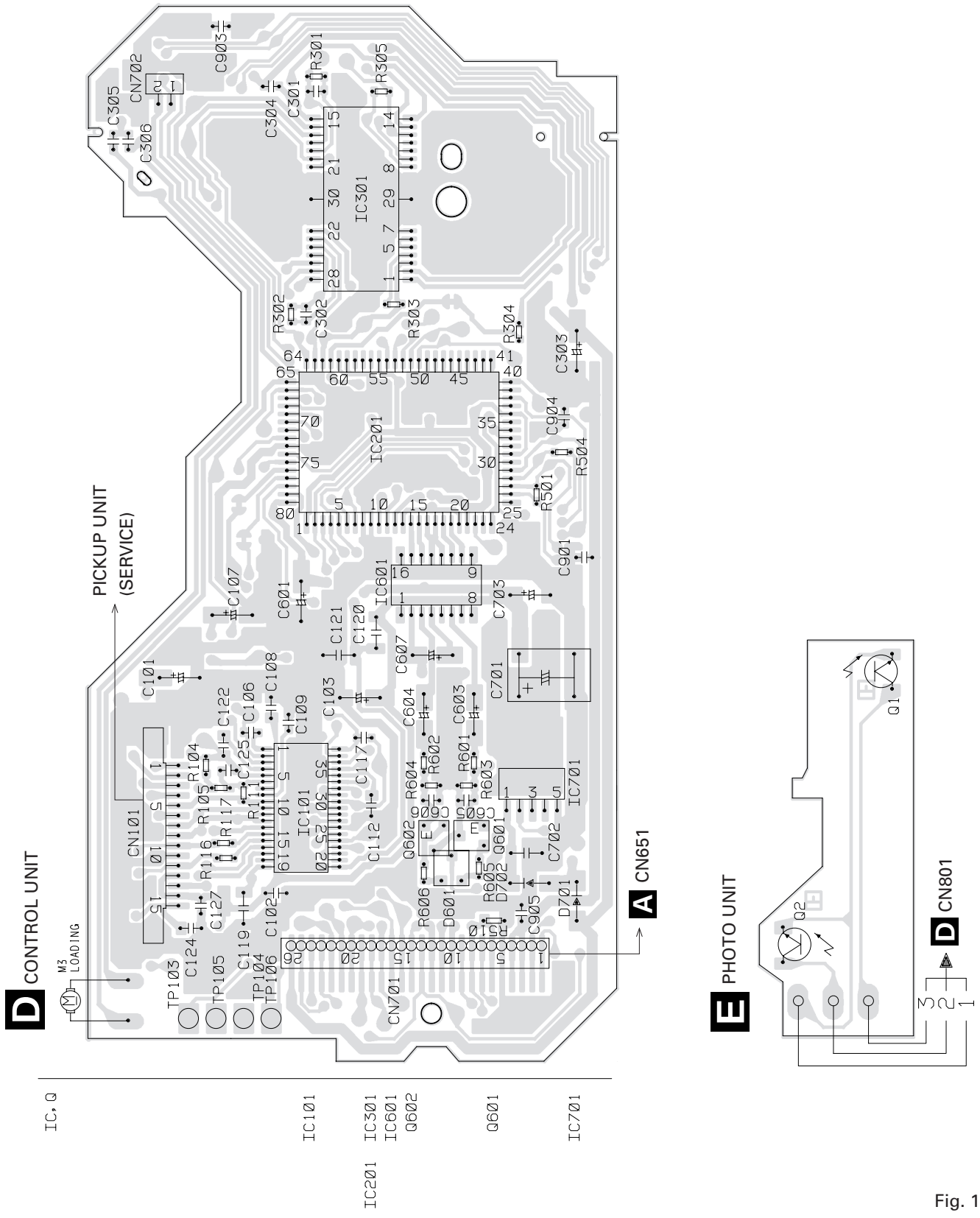


Fig. 19

SIDE B

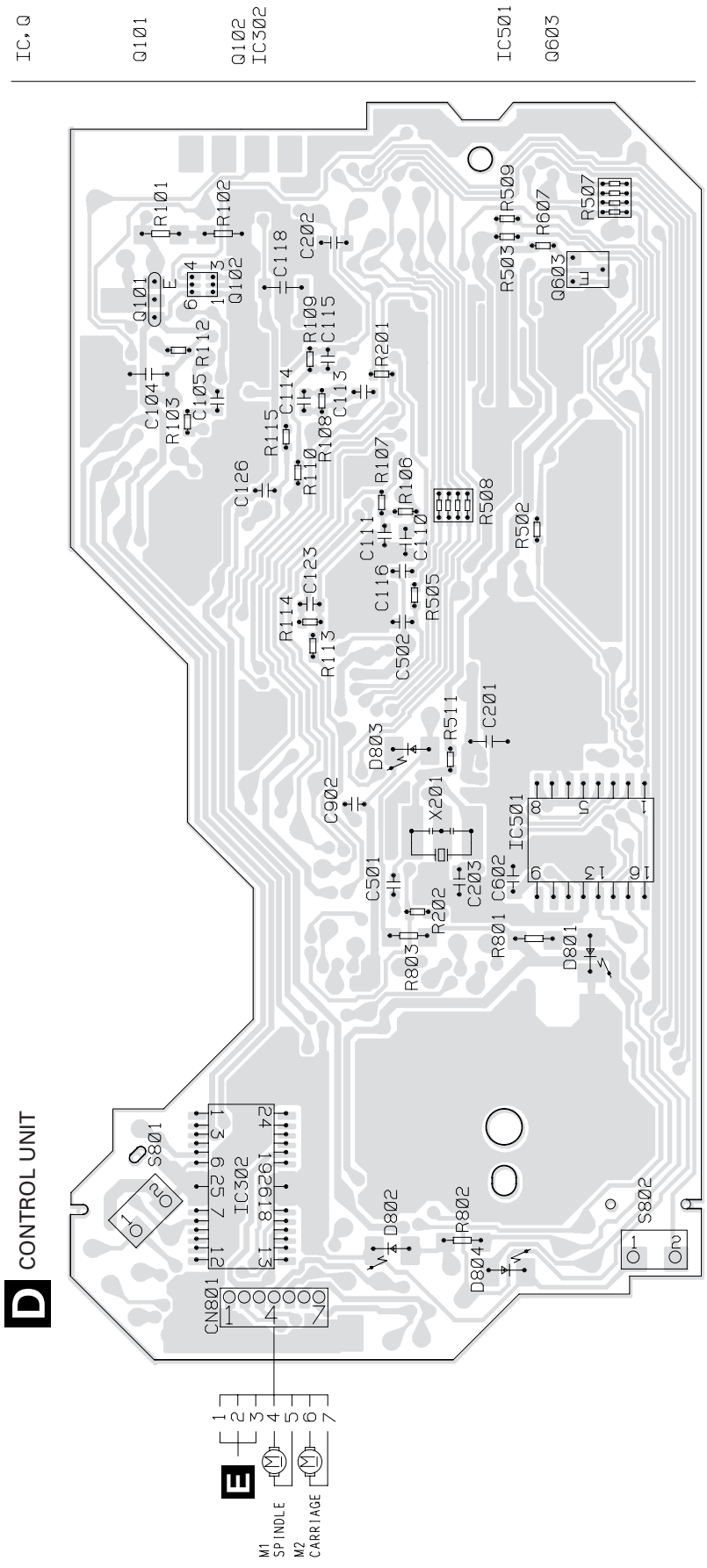

IC.Q
Q101
Q102
IC302
IC501
Q603
D CONTROL UNIT
E
M1
SPINDLE
M2
CARRIAGE
CN801
S801
S802
IC302
IC501
Q603
Q101
Q102
R101
R102
R103
R112
R201
R202
R203
R502
R503
R505
R507
R508
R509
R511
R607
R801
R802
R803
C104
C105
C110
C111
C113
C114
C115
C116
C118
C123
C126
C201
C202
C203
C501
C502
C602
C902
D801
D802
D803
D804
X201

Fig. 20

4.4 KEYBOARD PCB,SWITCH PCB

SIDE A

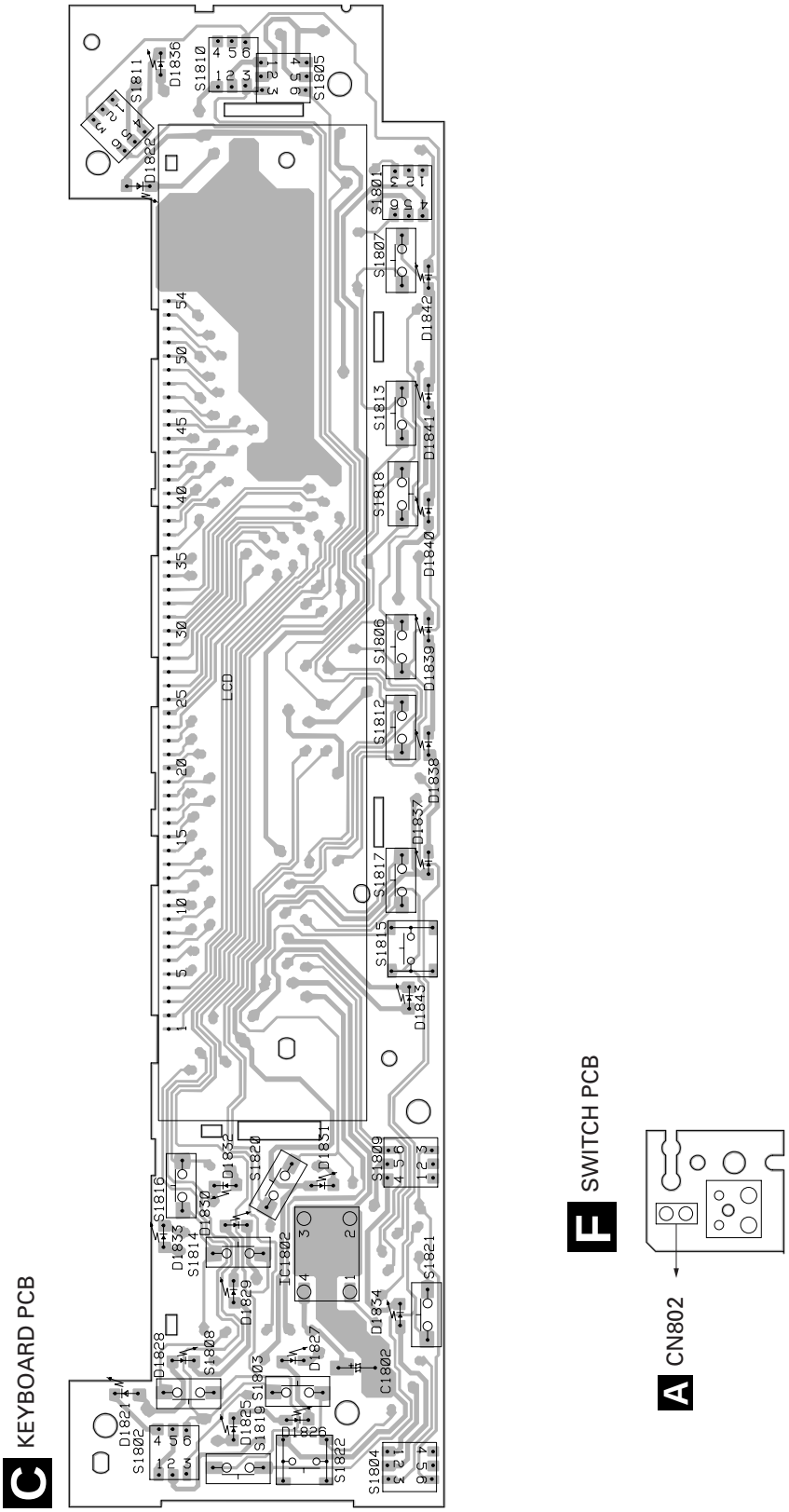


Fig. 21

SIDE B

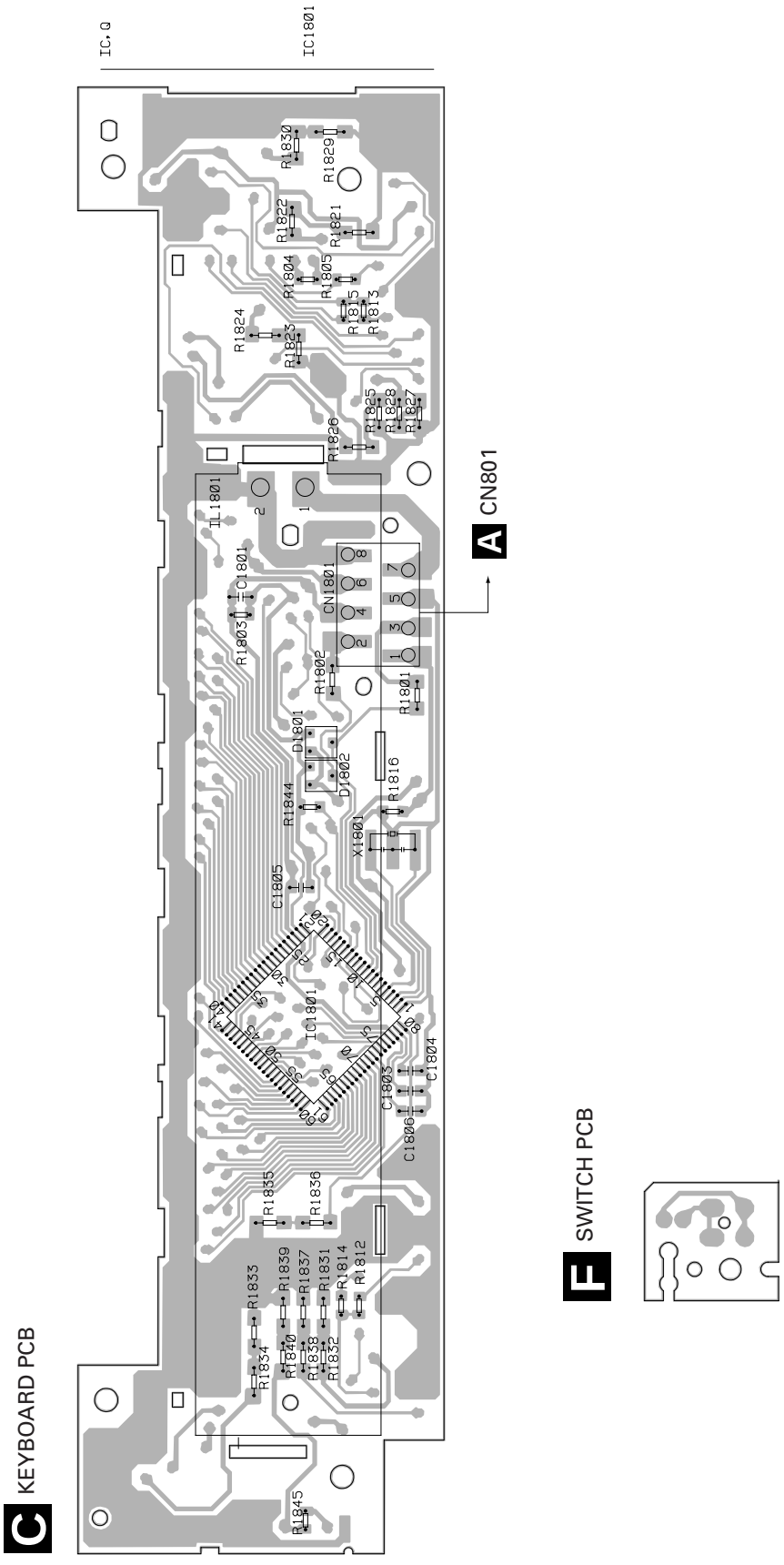


Fig. 22

5. ELECTRICAL PARTS LIST

NOTES:

- Parts whose parts numbers are omitted are subject to being not supplied.
- The part numbers shown below indicate chip components.

Chip Resistor

RS1/○S○○○J,RS1/○○S○○○J

Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

B Unit Number : CWE1416
Unit Name : FM/AM Tuner Unit
(DEH-P645R/EW, DEH-P545R/EW, DEH-P544R/EW)

MISCELLANEOUS

=====Circuit Symbol and No.		===Part Name	Part No.
IC	1	IC	PA4023B
IC	2	IC	PA4024A
Q	1	Transistor	2SC2412KLN
Q	2	Transistor	DTC124EU
Q	3	FET	3SK263
Q	31	Transistor	2SC2412KLN
Q	154	Transistor	DTC124EU
Q	165	Transistor	2SC2412KLN
Q	201	FET	2SK932
Q	202	Transistor	2SC2412KLN
Q	203	Transistor	DTC124EU
D	4	Diode	1SV250
D	5	Diode	KV1410-F1
D	7	Diode	KV1410-F1
D	8	Diode	KV1410-F1
D	201	Diode	MA157
D	202	Diode	MA157
D	231	Diode	SVC253
L	2	Coil	CTC1108
L	3	Inductor	LCTB2R2K2125
L	4	Coil	CTC1108
L	5	Coil	CTC1107
L	6	Inductor	LCTBR15K1608
L	51	Ferri-Inductor	LAU150K
L	201	Ferri-Inductor	LAU4R7K
L	202	Ferri-Inductor	LAU330K
L	203	Inductor	CTF1287
L	208	Inductor	LAU121K
L	231	Inductor	LCTA3R3J3225
T	31	Coil	CTE1116
T	51	Coil	CTC1136
TC	1		CCL1046
CF	51	Ceramic Filter	CTF1292
CF	52	Ceramic Filter	CTF1292
CF	53	Ceramic Filter	CTF1292
CF	232	Ceramic Filter	CTF1348
X	151	Resonator 920.5kHz	CSS1365
X	231	Crystal Resonator 10.26MHz	CSS1111
VR	154	Semi-fixed 150kΩ(B)	CCP1213
AR	1		DSP-201M-A11F

RESISTORS

=====Circuit Symbol and No.		===Part Name	Part No.
R	1		RS1/16S0R0J
R	4		RS1/16S154J
R	5		RS1/16S391J
R	6		RS1/16S223J
R	7		RS1/16S123J
R	8		RS1/16S332J
R	9		RS1/16S473J
R	10		RS1/16S223J
R	11		RS1/16S124J
R	13		RS1/16S563J
R	15		RS1/16S271J
R	16		RS1/16S104J
R	17		RS1/16S332J
R	18		RS1/16S332J
R	31		RS1/16S470J
R	32		RS1/16S822J
R	33		RS1/16S822J
R	34		RS1/16S331J
R	35		RS1/16S331J
R	51		RS1/16S271J
R	52		RS1/16S560J
R	55		RS1/16S102J
R	56		RS1/16S823J
R	61		RS1/16S392J
R	62		RS1/16S393J
R	101		RS1/16S272J
R	102		RS1/16S682J
R	103		RS1/16S333J
R	104		RS1/16S334J
R	105		RS1/16S683J
R	107		RS1/16S222J
R	151		RS1/16S222J
R	152		RS1/16S393J
R	154		RS1/16S104J
R	155		RS1/16S273J
R	156		RS1/16S243J
R	157		RS1/16S203J
R	160		RS1/16S222J
R	161		RS1/16S563J
R	162		RS1/16S105J
R	163		RS1/16S222J
R	202		RS1/16S223J
R	203		RS1/16S225J
R	204		RS1/16S103J
R	206		RS1/16S220J
R	207		RS1/16S101J
R	208		RS1/16S102J
R	209		RS1/16S471J
R	214		RS1/16S822J
R	215		RS1/16S822J
R	217		RS1/16S102J
R	231		RS1/16S272J
R	232		RS1/16S473J
R	237		RS1/16S103J
R	238		RS1/16S104J
R	239		RS1/16S104J
R	240		RS1/16S332J
R	241		RS1/16S202J
R	243		RS1/16S123J
R	244		RS1/16S103J
R	247		RS1/16S123J

=====Circuit Symbol and No.	Part Name	Part No.
CAPACITORS		
C 1		CCSQCH6R0D50
C 2		CCSRCK2R0C50
C 4		CCSRCH820J50
C 6		CCSRCH820J50
C 8		CKSRYB103K25
C 9		CKSQYB104K16
C 10		CCSRCKR50C50
C 11		CEJA1R0M50
C 12		CKSRYB222K50
C 13		CKSRYB222K50
C 14		CCSRCH220J50
C 16		CCSRCH8R0D50
C 17		CKSRYB222K50
C 18		CKSRYB103K25
C 19		CKSRYB222K50
C 20		CKSRYB222K50
C 21		CEJA100M16
C 22		CCSRTH9R0D50
C 23		CCSRTH120J50
C 24		CCSRCH471J50
C 25		CKSRYB103K25
C 31		CKSRYB103K25
C 32		CKSQYB472K50
C 33		CCSRCH5R0C50
C 34		CKSQYB104K16
C 36		CCSRRH201J50
C 51		CKSRYB223K25
C 52		CKSRYB103K25
C 54		CCSRCH470J50
C 55		CKSQYB223K25
C 56		CKSQYB104K16
C 57		CKSRYB472K50
C 58		CEJA330M10
C 59		CKSRYB103K25
C 61		CCSRCH270J50
C 62		CKSRYB103K25
C 63		CEJAR15M50
C 101		CEJANP100M10
C 102		CKSRYB182K50
C 103		CKSRYB682K25
C 104		CEJA2R2M50
C 105		CKSRYB103K25
C 106		CCSRCH151J50
C 107		CKSRYB103K25
C 151		CKSRYB472K50
C 152		CKSQYB104K16
C 153		CEJA3R3M50
C 154		CKSQYB104K16
C 157		CEJA3R3M50
C 158		CKSYB474K16
C 159		CEJA220M6R3
C 160		CKSQYB104K16
C 161		CKSQYB104K16
C 162		CEJA3R3M50
C 163		CKSRYB102K50
C 170		CCSRCH100D50
C 201		CCSRCH471J50
C 202		CCSRCH100D50
C 203		CKSRYB332K50
C 204		CKSQYB473K16
C 205		CKSQYB473K16
C 206		CKSQYB104K16
C 207		CCSRCH560J50
C 209		CKSQYB104K16
C 211		CCSRCH101J50
C 212		CEJA470M6R3
C 213		CKSRYB103K25
C 216		CCSRCH101J50
C 217		CEJA1R5M50
C 219		CCSRCH471J50
C 220		CKSRYB103K25
C 230		CKSRYB103K25
C 231		CCSRCH330J50
C 232		CCSRCH150J50
C 233		CKSQYB104K16
C 234		CEJA330M10
C 235		CKSRYB332K50
C 236		CKSQYB473K16
C 237		CCSRCH120J50
C 239		CKSRYB472K50
C 240		CEJAR47M50
C 241		CKSQYB104K16
C 242		CEJAR47M50
C 243		CEJAR33M50
C 244		CKSQYB473K16
C 245		CKSRYB123K25
C 246		CKSQYB473K16
C 250		CCSRCH471J50

B Unit Number : CWE1470
Unit Name : FM/AM Tuner Unit(DEH-P443R/EW)

MISCELLANEOUS		
IC 1	IC	PA4023B
IC 2	IC	PA4024A
Q 1	Transistor	2SC2412KLN
Q 2	Transistor	DTC124EU
Q 3	FET	3SK263
Q 31	Transistor	2SC2412KLN
Q 154	Transistor	DTC124EU
Q 165	Transistor	2SC2412KLN
D 4	Diode	1SV250
D 5	Diode	KV1410-F1
D 7	Diode	KV1410-F1
D 8	Diode	KV1410-F1
L 2	Coil	CTC1133
L 3	Inductor	LCTB2R2K2125
L 4	Coil	CTC1133
L 5	Coil	CTC1132
L 6	Inductor	LCTBR15K1608
L 51	Ferri-Inductor	LAU150K
T 31	Coil	CTE1117
T 51	Coil	CTC1136
TC 1		CCL1046
CF 51	Ceramic Filter	CTF1292
CF 52	Ceramic Filter	CTF1292
CF 53	Ceramic Filter	CTF1292
X 151	Resonator 920.5kHz	CSS1365
X 231	Crystal Resonator 10.26MHz	CSS1111
VR 154	Semi-fixed 150kΩ(B)	CCP1213
AR 1		DSP-201M

RESISTORS		
R 1		RS1/16S0R0J
R 4		RS1/16S154J
R 5		RS1/16S391J
R 6		RS1/16S223J
R 7		RS1/16S123J
R 8		RS1/16S332J
R 9		RS1/16S473J
R 10		RS1/16S223J
R 11		RS1/16S124J
R 13		RS1/16S563J

=====Circuit Symbol and No.	===Part Name	Part No.
R 15		RS1/16S271J
R 16		RS1/16S104J
R 17		RS1/16S332J
R 18		RS1/16S332J
R 31		RS1/16S470J
R 32		RS1/16S822J
R 33		RS1/16S822J
R 34		RS1/16S331J
R 35		RS1/16S331J
R 51		RS1/16S271J
R 52		RS1/16S560J
R 55		RS1/16S102J
R 56		RS1/16S823J
R 61		RS1/16S392J
R 62		RS1/16S393J
R 101		RS1/16S272J
R 102		RS1/16S682J
R 103		RS1/16S333J
R 104		RS1/16S334J
R 105		RS1/16S683J
R 107		RS1/16S222J
R 151		RS1/16S222J
R 152		RS1/16S393J
R 154		RS1/16S104J
R 155		RS1/16S273J
R 156		RS1/16S243J
R 157		RS1/16S203J
R 160		RS1/16S222J
R 161		RS1/16S563J
R 162		RS1/16S105J
R 163		RS1/16S222J
CAPACITORS		
C 1		CCSQCH6R0D50
C 2		CCSRCK2R0C50
C 4		CCSRCH820J50
C 6		CCSRCH820J50
C 8		CKSRYB103K25
C 9		CKSQYB104K16
C 10		CCSRCKR50C50
C 11		CEJA1R0M50
C 12		CKSRYB222K50
C 13		CKSRYB222K50
C 14		CCSRCH220J50
C 16		CCSRCH8R0D50
C 17		CKSRYB222K50
C 18		CKSRYB103K25
C 19		CKSRYB222K50
C 20		CKSRYB222K50
C 21		CEJA100M16
C 22		CCSRTH9R0D50
C 23		CCSRTH120J50
C 24		CCSRCH471J50
C 25		CKSRYB103K25
C 31		CKSRYB103K25
C 32		CKSQYB472K50
C 33		CCSRCH5R0C50
C 34		CKSQYB104K16
C 36		CCSRRH201J50
C 51		CKSRYB223K25
C 52		CKSRYB103K25
C 54		CCSRCH470J50
C 55		CKSQYB223K25
C 56		CKSQYB104K16
C 57		CKSRYB472K50
C 58		CEJA330M10
C 59		CKSRYB103K25
C 61		CCSRCH270J50

=====Circuit Symbol and No.	===Part Name	Part No.
C 62		CKSRYB103K25
C 63		CEJAR15M50
C 101		CEJANP100M10
C 102		CKSRYB182K50
C 103		CKSRYB682K25
C 104		CEJA2R2M50
C 105		CKSRYB103K25
C 106		CCSRCH151J50
C 107		CKSRYB103K25
C 151		CKSRYB472K50
C 152		CKSQYB104K16
C 153		CEJA3R3M50
C 154		CKSQYB104K16
C 157		CEJA3R3M50
C 158		CKSYB474K16
C 159		CEJA220M6R3
C 160		CKSQYB104K16
C 161		CKSQYB104K16
C 162		CEJA3R3M50
C 163		CKSRYB102K50
C 170		CCSRCH100D50

A Unit Number : CWM5619
Unit Name : Tuner Amp Unit(DEH-P645R/EW)

MISCELLANEOUS

IC	101	IC	TA2050S
IC	102	IC	CA0008AM
IC	151	IC	SN761027DL
IC	201	IC	TDA7386
IC	271	IC	M5282FP
IC	272	IC	MC14052BF
IC	273	IC	NJM4558MD
IC	274	IC	NJM4558MD
IC	501	IC	PM2007A
IC	601	IC	PD4885A
IC	731	IC	PMW001B
IC	732	IC	TA75S393F
IC	941	IC	S-80730ANDT
Q	101	Chip Transistor	2SA1162
Q	102	Transistor	DTC124EK
Q	141	Transistor	IMH3A
Q	142	Transistor	DTA114EK
Q	143	Transistor	2SD1757K
Q	144	Transistor	2SD1757K
Q	145	Transistor	2SC2412K
Q	201	Transistor	DTC144EK
Q	252	Transistor	IMH3A
Q	253	Transistor	IMD2A
Q	254	Transistor	IMH3A
Q	271	Transistor	IMH1A
Q	272	Transistor	IMD2A
Q	301	Transistor	DTA124EK
Q	302	Transistor	IMH3A
Q	501	Transistor	2SC2712
Q	502	Transistor	IMD2A
Q	601	Transistor	DTA114EK
Q	602	Transistor	DTC114EK
Q	731	Transistor	DTC143TK
Q	801	Chip Transistor	2SA1162
Q	802	Transistor	2SD1760F5
Q	803	Transistor	DTC114EK
Q	804	Transistor	DTA143EK
Q	805	Transistor	DTC114EK
Q	806	Transistor	2SC2712
Q	807	Transistor	2SB1238

Circuit Symbol and No.		Part Name	Part No.
Q	808	Transistor	DTC123EK
Q	809	Transistor	2SD1864
Q	851	Chip Transistor	2SA1162
Q	852	Transistor	DTC124EK
Q	853	Transistor	2SC2412K
Q	854	Transistor	2SC2412K
Q	855	Transistor	2SC2412K
Q	911	Transistor	2SD1760F5
Q	912	Transistor	IMD2A
Q	913	Transistor	DTA114EK
Q	921	Transistor	IMX1
Q	922	Transistor	DTC114EK
Q	923	Transistor	2SC2712
Q	931	Transistor	2SB1243
Q	932	Transistor	DTC114EK
Q	941	Transistor	DTA144TK
Q	951	Transistor	2SD2396
Q	952	Transistor	2SB1243
Q	953	Transistor	DTC124EK
Q	954	Transistor	2SA1674
Q	955	Transistor	2SA1674
Q	956	Transistor	IMH1A
Q	957	Transistor	2SC2712
Q	971	Transistor	2SD2396
Q	972	Transistor	IMD2A
Q	981	Chip Transistor	2SA1162
D	141	Diode	1SS133
D	201	Diode	DAN202K
D	251	Diode	1SS133
D	252	Diode	1SS133
D	321	Diode	HZS7L(C2)
D	501	Diode	MA152WK
D	801	Diode	DA204K
D	802	Diode	DA204K
D	803	Diode	DA204K
D	804	Diode	MA3062(M)
D	805	Diode	MA3075(L)
D	806	Diode	MA3039(H)
D	851	LED	BR4361F
D	901	Diode	ERA15-02VH
D	902	Diode	ERA15-02VH
D	911	Diode	ERA15-02VH
D	912	Diode	HZS6L(B1)
D	921	Diode	HZS7L(C3)
D	922	Diode	ERA15-02VH
D	923	Diode	HZS7L(A1)
D	931	Diode	ERA15-02VH
D	932	Diode	ERA15-02VH
D	933	Diode	ERA15-02VH
D	934	Diode	ERA15-02VH
D	951	Diode	HZS9L(B3)
D	952	Diode	HZS9L(A2)
D	953	Diode	1SS133
D	971	Diode	HZS9L(B1)
D	981	Diode	DAN202K
L	101	Inductor	LAU3R3J
L	501	Ferri-Inductor	LAU2R2K
L	502	Ferri-Inductor	LAU2R2K
L	503	Ferri-Inductor	LAU2R2K
L	601	Inductor	LAU100K
L	602	Ferri-Inductor	LAU2R2K
L	603	Ferri-Inductor	LAU2R2K
L	731	Ferri-Inductor	LAU101K
L	801	Ferri-Inductor	LAU2R2K
L	802	Transformer	MTX9006

Circuit Symbol and No.		Part Name	Part No.
L	981	Ferri-Inductor	LAU2R2K
TH	601	Thermistor	CCX1037
X	501	Crystal Resonator 7.200MHz	CSS1379
X	601	Resonator 12.58291MHz	CSS1402
X	701	Crystal Resonator 4.332MHz	CSS1056
S	941	Switch	CSG1046
VR	731	Semi-fixed 22kΩ(B)	CCP1321
		FM/AM Tuner Unit	CWE1416
BZ	601	Buzzer	CPV1011

RESISTORS

R	101		RS1/10S620J
R	102		RS1/10S101J
R	103		RS1/10S101J
R	104		RS1/10S222J
R	105		RS1/10S122J
R	106		RS1/10S122J
R	107		RS1/10S181J
R	108		RS1/10S181J
R	109		RS1/10S153J
R	110		RS1/10S153J
R	111		RS1/10S222J
R	112		RS1/10S222J
R	113		RS1/10S102J
R	114		RS1/10S102J
R	115		RS1/10S473J
R	116		RS1/10S473J
R	117		RS1/10S332J
R	118		RS1/10S682J
R	119		RS1/10S103J
R	133		RS1/10S272J
R	134		RS1/10S272J
R	143		RS1/10S224J
R	144		RS1/10S224J
R	145		RS1/10S222J
R	146		RS1/10S222J
R	147		RS1/10S223J
R	148		RS1/10S223J
R	149		RS1/10S105J
R	150		RS1/10S224J
R	151		RS1/10S272J
R	152		RS1/10S272J
R	153		RS1/10S151J
R	154		RS1/10S151J
R	155		RS1/10S102J
R	201		RS1/10S103J
R	202		RS1/10S331J
R	203		RS1/10S103J
R	204		RS1/10S103J
R	253		RS1/10S681J
R	254		RS1/10S681J
R	257		RS1/10S223J
R	258		RS1/10S223J
R	259		RS1/10S821J
R	260		RS1/10S821J
R	263		RS1/10S0R0J
R	264		RS1/10S0R0J
R	265		RS1/10S223J
R	266		RS1/10S223J
R	271		RS1/10S183J
R	272		RS1/10S183J
R	273		RS1/10S103J
R	274		RS1/10S243J
R	275		RS1/10S683J
R	276		RS1/10S105J
R	277		RS1/10S103J

=====Circuit Symbol and No.===Part Name			Part No.	=====Circuit Symbol and No.===Part Name			Part No.
R	278		RS1/10S103J	R	626		RS1/10S102J
R	279		RS1/10S104J	R	627		RA3C681J
R	280		RS1/10S104J	R	630		RS1/10S473J
R	281		RS1/10S104J	R	631		RS1/10S473J
R	282		RS1/10S104J	R	632		RS1/10S393J
R	283		RS1/10S104J	R	633		RS1/10S0R0J
R	284		RS1/10S104J	R	634		RS1/10S0R0J
R	285		RS1/10S105J	R	651		RS1/10S681J
R	287		RS1/10S473J	R	652		RS1/10S681J
R	288		RS1/10S473J	R	653		RS1/10S681J
R	301		RS1/10S151J	R	654		RS1/10S681J
R	302		RS1/10S151J	R	701		RS1/10S105J
R	303		RS1/10S104J	R	702		RS1/10S222J
R	304		RS1/10S104J	R	734		RS1/10S102J
R	351		RS1/10S0R0J	R	735		RS1/10S102J
R	352		RS1/10S0R0J	R	737		RS1/10S333J
R	353		RS1/10S0R0J	R	738		RS1/10S0R0J
R	354		RS1/10S0R0J	R	739		RS1/10S102J
R	363		RS1/10S330J	R	740		RS1/10S102J
R	501		RS1/10S0R0J	R	741		RS1/10S222J
R	502		RS1/10S222J	R	742		RS1/10S222J
R	503		RS1/10S222J	R	743		RS1/10S684J
R	504		RS1/10S102J	R	744		RS1/10S681J
R	505		RS1/10S222J	R	745		RS1/10S562J
R	506		RS1/10S472J	R	746		RS1/10S102J
R	507		RS1/10S222J	R	747		RS1/10S103J
R	508		RS1/10S682J	R	748		RS1/10S562J
R	509		RS1/10S682J	R	750		RS1/10S473J
R	510		RS1/10S561J	R	751		RS1/10S681J
R	511		RS1/10S103J	R	752		RS1/10S473J
R	512		RS1/10S472J	R	753		RS1/10S473J
R	513		RS1/10S222J	R	754		RA3C102J
R	514		RS1/10S392J	R	801		RS1/8S222J
R	515		RS1/10S392J	R	802		RS1/8S222J
R	516		RS1/10S152J	R	803		RS1/8S222J
R	517		RS1/10S102J	R	804		RS1/10S132J
R	518		RS1/10S272J	R	805		RS1/10S822J
R	520		RS1/10S103J	R	806		RS2PMF100J
R	522		RS1/10S562J	R	807		RD1/4PU471J
R	523		RS1/10S472J	R	808		RS1/10S223J
R	524		RS1/10S562J	R	809		RS1/10S682J
R	525		RS1/10S473J	R	810		RS1/10S103J
R	526		RS1/10S0R0J	R	811		RS1/10S224J
R	527		RS1/10S681J	R	812		RS1/10S104J
R	528		RS1/10S0R0J	R	813		RS2PMF220J
R	601		RS1/10S102J	R	814		RS1/10S222J
R	602		RS1/10S473J	R	815		RD1/4PU152J
R	604		RS1/10S473J	R	851		RS1/8S471J
R	605		RS1/10S473J	R	852		RS1/10S473J
R	606		RS1/10S473J	R	853		RS1/10S223J
R	607		RS1/10S473J	R	854		RS1/10S223J
R	608		RS1/10S473J	R	855		RS1/10S103J
R	609		RS1/10S473J	R	856		RS1/10S223J
R	610		RS1/10S222J	R	857		RS1/10S272J
R	611		RS1/10S222J	R	858		RS1/8S102J
R	612		RS1/10S222J	R	859		RS1/10S223J
R	613		RS1/10S393J	R	860		RS1/10S272J
R	615		RN1/10SE2002D	R	861		RS1/10S223J
R	616		RS1/10S473J	R	862		RS1/10S272J
R	617		RS1/10S473J	R	863		RS1/10S103J
R	618		RS1/10S473J	R	864		RS1/8S102J
R	619		RS1/10S473J	R	865		RS1/8S102J
R	621		RS1/10S202J	R	866		RS1/10S473J
R	622		RS1/10S102J	R	867		RS1/10S473J
R	625		RS1/10S681J	R	869		RS1/10S103J

=====Circuit Symbol and No.		===Part Name	Part No.
R	870		RS1/10S102J
R	911		RS1/10S752J
R	912		RS1/10S101J
R	913		RS1/10S392J
R	921		RS1/10S103J
R	922		RS1/10S473J
R	923		RS1/10S103J
R	924		RS1/10S103J
R	925		RS1/10S473J
R	926		RS1/10S472J
R	927		RS1/10S224J
R	933		RS1/10S472J
R	934		RD1/4PU272J
R	941		RS1/10S102J
R	942		RS1/10S822J
R	943		RS1/8S471J
R	946		RS1/10S473J
R	951		RD1/4PU221J
R	952		RD1/4PU511J
R	953		RS1/10S1R0J
R	954		RD1/4PU331J
R	955		RD1/4PU331J
R	956		RS1/10S472J
R	957		RD1/4PU102J
R	958		RS1/10S472J
R	959		RD1/4PU102J
R	960		RS1/10S472J
R	961		RS1/10S103J
R	962		RS1/10S473J
R	963		RS1/10S473J
R	971		RD1/4PU221J
R	972		RS1/10S221J
R	973		RS1/10S472J
R	974		RS1/10S222J
R	981		RS1/8S153J
R	982		RS1/10S472J
R	983		RS1/10S472J
R	984		RS1/10S102J
CAPACITORS			
C	101		CEJA1R0M50
C	102		CEJA1R0M50
C	103		CEJA1R0M50
C	104		CEJA1R0M50
C	105		CEJA100M16
C	106		CKSQYB104K25
C	107		CKSQYB473K25
C	108		CKSQYB473K25
C	131		CEJA2R2M50
C	132		CEJA2R2M50
C	133		CKSQYB223K50
C	134		CKSQYB223K50
C	135		CEJA4R7M35
C	136		CEJA4R7M35
C	137		CEJA2R2M50
C	138		CEJA2R2M50
C	141		CEJA1R0M50
C	142		CEJA1R0M50
C	143		CKSQYB471K50
C	144		CKSQYB223K50
C	151		CKSQYB473K25
C	152		CEJA470M10
C	153		CEJANP100M16
C	154		CEJANP100M16
C	155		CKSQYB822K50

=====Circuit Symbol and No.		===Part Name	Part No.
C	156		CKSQYB822K50
C	157		CEJA1R0M50
C	158		CEJA1R0M50
C	159		CKSQYB183K50
C	160		CKSQYB183K50
C	161		CKSQYB102K50
C	162		CKSQYB102K50
C	163		CEJANP2R2M35
C	164		CEJANP2R2M35
C	165		CKSQYB333K25
C	166		CKSQYB333K25
C	167		CEJA220M16
C	168		CEJA2R2M50
C	169		CKSQYB104K25
C	170		CCSQCH101K50
C	201		CKSQYB224K16
C	202		CKSQYB224K16
C	203		CKSQYB224K16
C	204		CKSQYB224K16
C	205		CEJA1R0M50
C	206	3300µF/16V	CCH1150
C	207		CKSQYB473K50
C	208		CEJA100M16
C	209		CEJA1R0M50
C	210		CEJA330M16
C	211		CKSQYB103K50
C	212		CKSQYB102K50
C	253		CEJA4R7M35
C	254		CEJA4R7M35
C	257		CKSQYB221K50
C	258		CKSQYB221K50
C	271		CEJA220M10
C	272		CEJA101M10
C	273		CKSQYB472K50
C	274		CEJA4R7M35
C	275		CEJANP220M10
C	276		CKSQYB222K50
C	277		CKSQYB183K50
C	278		CKSQYB473K25
C	279		CKSQYB273K25
C	280		CKSQYB103K50
C	281		CKSQYB223K50
C	282		CKSQYB153K50
C	283		CEJA4R7M35
C	284		CEJA4R7M35
C	285		CEJA1R0M50
C	286		CEJA1R0M50
C	287		CKSQYB473K25
C	288		CKSQYB473K16
C	289		CKSQYB103K50
C	301		CEJA100M16
C	302		CEJA100M16
C	362		CKSQYB103K50
C	501		CCSQCH150K50
C	502		CCSQCH150K50
C	503		CKSQYB103K50
C	504		CKSQYB103K50
C	505		CCSQCH101K50
C	506		CKSQYB103K50
C	507		CKSQYB103K50
C	508		CKSQYB102K50
C	509		CEJA220M10
C	511		CKSQYB152K50
C	512		CKSQYB223K50
C	514		CKSQYB473K16

=====Circuit Symbol and No.		===Part Name	Part No.
C	515		CEJA220M6R3
C	516		CKSQYB103K50
C	519		CEJA220M10
C	520		CKSQYB103K50
C	521	4.7µF/16V	CCH1250
C	522		CKSQYB103K50
C	523		CKLSR473K16
C	525	4.7µF/16V	CCH1250
C	526		CKSQYB103K50
C	527		CEJAR47M50
C	528		CKSQYB103K50
C	529		CCSQCH101K50
C	530		CKSQYB223K50
C	532		CKSQYB473K16
C	534		CCSQCH101K50
C	601		CCSQCH200J50
C	602		CCSQCH200J50
C	603		CEJA4R7M35
C	604		CCSQCH101J50
C	605		CCSQCH101J50
C	606		CCSQCH101K50
C	607		CCSQCH101K50
C	608		CCSQCH101K50
C	651		CCSQCH821J50
C	652		CCSQCH821J50
C	653		CCSQCH101J50
C	701		CCSQCH270J50
C	702		CCSQCH270J50
C	731		CEJA4R7M35
C	733		CKSQYB472K50
C	734		CKSQYB104K25
C	735		CKSYB105K16
C	736		CKSQYB104K25
C	737		CKSQYB222K50
C	738		CKSQYB104K25
C	739		CEJA100M16
C	740		CKSQYB103K50
C	741		CKSQYB103K50
C	742		CKSQYB223K50
C	743		CKSQYB104K25
C	802		CKSQYB104K25
C	803		CEJA100M16
C	804		CKSQYB103K50
C	805		CEJA100M16
C	806		CKSQYB103K50
C	807		CKSQYB333K25
C	808		CKSQYB333K25
C	853		CKSQYB103K50
C	854		CKSQYB103K50
C	855		CKSQYB103K50
C	856		CKSQYB473K25
C	911		CKSQYB103K50
C	912		CEJA470M10
C	913		CKSQYB472K50
C	914	1000µF/16V	CCH1312
C	921		CKSYB105K16
C	922		CKSQYB102K50
C	941		CEJA2R2M50
C	942		CKSQYB102K50
C	951		CKSQYB103K50
C	952		CEJA101M10
C	953	330µF/10V	CCH1181
C	971		CKSQYB473K25
C	972		CKSQYB102K50
C	973		CEJA101M10

=====Circuit Symbol and No.		===Part Name	Part No.

A Unit Number : CWM5624
Unit Name : Tuner Amp Unit(DEH-P545R/EW, P544R/EW)

MISCELLANEOUS

IC	101	IC	TA2050S
IC	102	IC	CA0008AM
IC	151	IC	SN761027DL
IC	201	IC	TDA7386
IC	501	IC	PM2007A
IC	601	IC	PD4885A
IC	731	IC	PMW001B
IC	732	IC	TA75S393F
IC	941	IC	S-80730ANDT
Q	101	Chip Transistor	2SA1162
Q	102	Transistor	DTC124EK
Q	141	Transistor	IMH3A
Q	142	Transistor	DTA114EK
Q	143	Transistor	2SD1757K
Q	144	Transistor	2SD1757K
Q	145	Transistor	2SC2412K
Q	201	Transistor	DTC144EK
Q	253	Transistor	IMD2A
Q	254	Transistor	IMH3A
Q	301	Transistor	DTA124EK
Q	302	Transistor	IMH3A
Q	501	Transistor	2SC2712
Q	502	Transistor	IMD2A
Q	601	Transistor	DTA114EK
Q	602	Transistor	DTC114EK
Q	731	Transistor	DTC143TK
Q	801	Chip Transistor	2SA1162
Q	802	Transistor	2SD1760F5
Q	803	Transistor	DTC114EK
Q	804	Transistor	DTA143EK
Q	805	Transistor	DTC114EK
Q	806	Transistor	2SC2712
Q	807	Transistor	2SB1238
Q	808	Transistor	DTC123EK
Q	809	Transistor	2SD1864
Q	851	Chip Transistor	2SA1162
Q	852	Transistor	DTC124EK
Q	853	Transistor	2SC2412K
Q	911	Transistor	2SD1760F5
Q	912	Transistor	IMD2A
Q	913	Transistor	DTA114EK
Q	921	Transistor	IMX1
Q	922	Transistor	DTC114EK
Q	923	Transistor	2SC2712
Q	931	Transistor	2SB1243
Q	941	Transistor	DTA144TK
Q	951	Transistor	2SD2396
Q	952	Transistor	2SB1243
Q	953	Transistor	DTC124EK
Q	954	Transistor	2SA1674
Q	955	Transistor	2SA1674
Q	956	Transistor	IMH1A
Q	957	Transistor	2SC2712
Q	971	Transistor	2SD2396
Q	972	Transistor	IMD2A
D	141	Diode	1SS133
D	201	Diode	DAN202K
D	251	Diode	1SS133
D	501	Diode	MA152WK
D	801	Diode	DA204K

=====Circuit Symbol and No.		===Part Name	Part No.
D	802	Diode	DA204K
D	803	Diode	DA204K
D	804	Diode	MA3062(M)
D	805	Diode	MA3075(L)
D	806	Diode	MA3039(H)
D	851	LED	BR4361F
D	901	Diode	ERA15-02VH
D	902	Diode	ERA15-02VH
D	911	Diode	ERA15-02VH
D	912	Diode	HZS6L(B1)
D	921	Diode	HZS7L(C3)
D	922	Diode	ERA15-02VH
D	923	Diode	HZS7L(A1)
D	932	Diode	ERA15-02VH
D	951	Diode	HZS9L(B3)
D	952	Diode	HZS9L(A2)
D	953	Diode	1SS133
D	971	Diode	HZS9L(B1)
L	101	Inductor	LAU3R3J
L	501	Ferri-Inductor	LAU2R2K
L	502	Ferri-Inductor	LAU2R2K
L	503	Ferri-Inductor	LAU2R2K
L	601	Inductor	LAU100K
L	602	Ferri-Inductor	LAU2R2K
L	603	Ferri-Inductor	LAU2R2K
L	731	Ferri-Inductor	LAU101K
L	801	Ferri-Inductor	LAU2R2K
L	802	Transformer	MTX9006
TH	601	Thermistor	CCX1037
X	501	Crystal Resonator 7.200MHz	CSS1379
X	601	Resonator 12.58291MHz	CSS1402
X	701	Crystal Resonator 4.332MHz	CSS1056
S	941	Switch	CSG1046
VR	731	Semi-fixed 22kΩ(B)	CCP1321
		FM/AM Tuner Unit	CWE1416
BZ	601	Buzzer	CPV1011

RESISTORS

R	101	RS1/10S620J
R	102	RS1/10S101J
R	103	RS1/10S101J
R	104	RS1/10S222J
R	105	RS1/10S122J
R	106	RS1/10S122J
R	107	RS1/10S181J
R	108	RS1/10S181J
R	109	RS1/10S153J
R	110	RS1/10S153J
R	111	RS1/10S222J
R	112	RS1/10S222J
R	113	RS1/10S102J
R	114	RS1/10S102J
R	115	RS1/10S473J
R	116	RS1/10S473J
R	117	RS1/10S332J
R	118	RS1/10S682J
R	119	RS1/10S103J
R	133	RS1/10S272J
R	134	RS1/10S272J
R	143	RS1/10S224J
R	144	RS1/10S224J
R	145	RS1/10S222J
R	146	RS1/10S222J
R	147	RS1/10S223J
R	148	RS1/10S223J
R	149	RS1/10S105J
R	150	RS1/10S224J
R	151	RS1/10S272J
R	152	RS1/10S272J
R	153	RS1/10S151J
R	154	RS1/10S151J
R	155	RS1/10S102J
R	201	RS1/10S103J
R	202	RS1/10S331J
R	203	RS1/10S103J
R	204	RS1/10S103J
R	259	RS1/10S681J
R	260	RS1/10S681J
R	265	RS1/10S223J
R	266	RS1/10S223J
R	268	RS1/10S0R0J
R	269	RS1/10S0R0J
R	301	RS1/10S151J
R	302	RS1/10S151J
R	303	RS1/10S104J
R	304	RS1/10S104J
R	351	RS1/10S0R0J
R	352	RS1/10S0R0J
R	353	RS1/10S0R0J
R	354	RS1/10S0R0J
R	501	RS1/10S0R0J
R	502	RS1/10S222J
R	503	RS1/10S222J
R	504	RS1/10S102J
R	505	RS1/10S222J
R	506	RS1/10S472J
R	507	RS1/10S222J
R	508	RS1/10S682J
R	509	RS1/10S682J
R	510	RS1/10S561J
R	511	RS1/10S103J
R	512	RS1/10S472J
R	513	RS1/10S222J
R	514	RS1/10S392J
R	515	RS1/10S392J
R	516	RS1/10S152J
R	517	RS1/10S102J
R	518	RS1/10S272J
R	520	RS1/10S103J
R	522	RS1/10S562J
R	523	RS1/10S472J
R	524	RS1/10S562J
R	525	RS1/10S473J
R	526	RS1/10S0R0J
R	527	RS1/10S681J
R	528	RS1/10S0R0J
R	601	RS1/10S102J
R	602	RS1/10S473J
R	604	RS1/10S473J
R	605	RS1/10S473J
R	606	RS1/10S473J
R	607	RS1/10S473J
R	608	RS1/10S473J
R	609	RS1/10S473J
R	610	RS1/10S222J
R	611	RS1/10S222J
R	612	RS1/10S222J
R	613	RS1/10S393J
R	615	RN1/10SE2002D
R	616	RS1/10S473J
R	617	RS1/10S473J
R	618	RS1/10S473J
R	620	RS1/10S0R0J

Circuit Symbol and No.	Part Name	Part No.
R 621		RS1/10S202J
R 622		RS1/10S102J
R 625		RS1/10S681J
R 626		RS1/10S102J
R 627		RA3C681J
R 630		RS1/10S473J
R 631		RS1/10S473J
R 632		RS1/10S393J
R 633		RS1/10S0R0J
R 634		RS1/10S0R0J
R 651		RS1/10S681J
R 652		RS1/10S681J
R 653		RS1/10S681J
R 654		RS1/10S681J
R 701		RS1/10S105J
R 702		RS1/10S222J
R 734		RS1/10S102J
R 735		RS1/10S102J
R 737		RS1/10S333J
R 738		RS1/10S0R0J
R 739		RS1/10S102J
R 740		RS1/10S102J
R 741		RS1/10S222J
R 742		RS1/10S222J
R 743		RS1/10S684J
R 744		RS1/10S681J
R 745		RS1/10S562J
R 746		RS1/10S102J
R 747		RS1/10S103J
R 748		RS1/10S562J
R 750		RS1/10S473J
R 751		RS1/10S681J
R 752		RS1/10S473J
R 753		RS1/10S473J
R 754		RA3C102J
R 801		RS1/8S222J
R 802		RS1/8S222J
R 803		RS1/8S222J
R 804		RS1/10S132J
R 805		RS1/10S822J
R 806		RS2PMF100J
R 807		RD1/4PU471J
R 808		RS1/10S223J
R 809		RS1/10S682J
R 810		RS1/10S103J
R 811		RS1/10S224J
R 812		RS1/10S104J
R 813		RS2PMF220J
R 814		RS1/10S222J
R 815		RD1/4PU152J
R 851		RS1/8S471J
R 852		RS1/10S473J
R 853		RS1/10S223J
R 854		RS1/10S223J
R 855		RS1/10S103J
R 856		RS1/10S223J
R 857		RS1/10S272J
R 858		RS1/8S102J
R 866		RS1/10S473J
R 867		RS1/10S473J
R 869		RS1/10S103J
R 870		RS1/10S102J
R 911		RS1/10S752J
R 912		RS1/10S101J
R 913		RS1/10S392J

Circuit Symbol and No.	Part Name	Part No.
R 921		RS1/10S103J
R 922		RS1/10S473J
R 923		RS1/10S103J
R 924		RS1/10S103J
R 925		RS1/10S473J
R 926		RS1/10S472J
R 927		RS1/10S224J
R 941		RS1/10S102J
R 942		RS1/10S822J
R 943		RS1/8S471J
R 946		RS1/10S473J
R 951		RD1/4PU221J
R 952		RD1/4PU511J
R 953		RS1/10S1R0J
R 954		RD1/4PU331J
R 955		RD1/4PU331J
R 956		RS1/10S472J
R 957		RD1/4PU102J
R 958		RS1/10S472J
R 959		RD1/4PU102J
R 960		RS1/10S472J
R 961		RS1/10S103J
R 962		RS1/10S473J
R 963		RS1/10S473J
R 971		RD1/4PU221J
R 972		RS1/10S221J
R 973		RS1/10S472J
R 974		RS1/10S222J
CAPACITORS		
C 101		CEJA1R0M50
C 102		CEJA1R0M50
C 103		CEJA1R0M50
C 104		CEJA1R0M50
C 105		CEJA100M16
C 106		CKSQYB104K25
C 107		CKSQYB473K25
C 108		CKSQYB473K25
C 131		CEJA2R2M50
C 132		CEJA2R2M50
C 133		CKSQYB223K50
C 134		CKSQYB223K50
C 135		CEJA4R7M35
C 136		CEJA4R7M35
C 137		CEJA2R2M50
C 138		CEJA2R2M50
C 141		CEJA1R0M50
C 142		CEJA1R0M50
C 143		CKSQYB471K50
C 144		CKSQYB223K50
C 151		CKSQYB473K25
C 152		CEJA470M10
C 153		CEJANP100M16
C 154		CEJANP100M16
C 155		CKSQYB822K50
C 156		CKSQYB822K50
C 157		CEJA1R0M50
C 158		CEJA1R0M50
C 159		CKSQYB183K50
C 160		CKSQYB183K50
C 161		CKSQYB102K50
C 162		CKSQYB102K50
C 163		CEJANP2R2M35
C 164		CEJANP2R2M35
C 165		CKSQYB333K25

=====Circuit Symbol and No.		===Part Name	Part No.
C	166		CKSQYB333K25
C	167		CEJA220M16
C	168		CEJA2R2M50
C	169		CKSQYB104K25
C	170		CCSQCH101K50
C	201		CKSQYB224K16
C	202		CKSQYB224K16
C	203		CKSQYB224K16
C	204		CKSQYB224K16
C	205		CEJA1R0M50
C	206	3300µF/16V	CCH1150
C	207		CKSQYB473K50
C	208		CEJA100M16
C	209		CEJA1R0M50
C	210		CEJA330M16
C	211		CKSQYB103K50
C	212		CKSQYB102K50
C	253		CEJA4R7M35
C	254		CEJA4R7M35
C	301		CEJA100M16
C	302		CEJA100M16
C	501		CCSQCH150K50
C	502		CCSQCH150K50
C	503		CKSQYB103K50
C	504		CKSQYB103K50
C	505		CCSQCH101K50
C	506		CKSQYB103K50
C	507		CKSQYB103K50
C	508		CKSQYB102K50
C	509		CEJA220M10
C	511		CKSQYB152K50
C	512		CKSQYB223K50
C	514		CKSQYB473K16
C	515		CEJA220M6R3
C	516		CKSQYB103K50
C	519		CEJA220M10
C	520		CKSQYB103K50
C	521	4.7µF/16V	CCH1250
C	522		CKSQYB103K50
C	523		CKLSR473K16
C	525	4.7µF/16V	CCH1250
C	526		CKSQYB103K50
C	527		CEJAR47M50
C	528		CKSQYB103K50
C	529		CCSQCH101K50
C	530		CKSQYB223K50
C	532		CKSQYB473K16
C	534		CCSQCH101K50
C	601		CCSQCH200J50
C	602		CCSQCH200J50
C	603		CEJA4R7M35
C	604		CCSQCH101J50
C	605		CCSQCH101J50
C	606		CCSQCH101K50
C	607		CCSQCH101K50
C	608		CCSQCH101K50
C	651		CCSQCH821J50
C	652		CCSQCH821J50
C	653		CCSQCH101J50
C	701		CCSQCH270J50
C	702		CCSQCH270J50
C	731		CEJA4R7M35
C	733		CKSQYB472K50
C	734		CKSQYB104K25
C	735		CKSYB105K16

=====Circuit Symbol and No.		===Part Name	Part No.
C	736		CKSQYB104K25
C	737		CKSQYB222K50
C	738		CKSQYB104K25
C	739		CEJA100M16
C	740		CKSQYB103K50
C	741		CKSQYB103K50
C	742		CKSQYB223K50
C	743		CKSQYB104K25
C	802		CKSQYB104K25
C	803		CEJA100M16
C	804		CKSQYB103K50
C	805		CEJA100M16
C	806		CKSQYB103K50
C	807		CKSQYB333K25
C	808		CKSQYB333K25
C	853		CKSQYB103K50
C	856		CKSQYB473K25
C	911		CKSQYB103K50
C	912		CEJA470M10
C	913		CKSQYB472K50
C	914	1000µF/16V	CCH1312
C	921		CKSYB105K16
C	922		CKSQYB102K50
C	941		CEJA2R2M50
C	942		CKSQYB102K50
C	951		CKSQYB103K50
C	952		CEJA101M10
C	953	330µF/10V	CCH1181
C	971		CKSQYB473K25
C	972		CKSQYB102K50
C	973		CEJA101M10

A Unit Number : CWM5621
Unit Name : Tuner Amp Unit(DEH-P443R/EW)

MISCELLANEOUS

IC	101	IC	TA2050S
IC	102	IC	CA0008AM
IC	151	IC	SN761027DL
IC	201	IC	TDA7384
IC	501	IC	PM2007A
IC	601	IC	PD4885A
IC	731	IC	PMW001B
IC	732	IC	TA75S393F
IC	941	IC	S-80730ANDT
Q	101	Chip Transistor	2SA1162
Q	102	Transistor	DTC124EK
Q	141	Transistor	IMH3A
Q	142	Transistor	DTA114EK
Q	143	Transistor	2SD1757K
Q	144	Transistor	2SD1757K
Q	145	Transistor	2SC2412K
Q	201	Transistor	DTC144EK
Q	253	Transistor	IMD2A
Q	254	Transistor	IMH3A
Q	301	Transistor	DTA124EK
Q	302	Transistor	IMH3A
Q	501	Transistor	2SC2712
Q	502	Transistor	IMD2A
Q	601	Transistor	DTA114EK
Q	602	Transistor	DTC114EK
Q	731	Transistor	DTC143TK
Q	801	Chip Transistor	2SA1162
Q	802	Transistor	2SD1760F5
Q	803	Transistor	DTC114EK
Q	804	Transistor	DTA143EK

Circuit Symbol and No.	Part Name	Part No.
Q 805	Transistor	DTC114EK
Q 806	Transistor	2SC2712
Q 807	Transistor	2SB1238
Q 808	Transistor	DTC123EK
Q 809	Transistor	2SD1864
Q 911	Transistor	2SD1760F5
Q 912	Transistor	IMD2A
Q 913	Transistor	DTA114EK
Q 921	Transistor	IMX1
Q 922	Transistor	DTC114EK
Q 923	Transistor	2SC2712
Q 951	Transistor	2SD2396
Q 952	Transistor	2SB1243
Q 953	Transistor	DTC124EK
Q 955	Transistor	2SA1674
Q 956	Transistor	IMH1A
Q 957	Transistor	2SC2712
Q 971	Transistor	2SD2396
Q 972	Transistor	IMD2A
D 141	Diode	1SS133
D 201	Diode	DAN202K
D 251	Diode	1SS133
D 801	Diode	DA204K
D 802	Diode	DA204K
D 803	Diode	DA204K
D 804	Diode	MA3062(M)
D 805	Diode	MA3075(L)
D 806	Diode	MA3039(H)
D 901	Diode	ERA15-02VH
D 902	Diode	ERA15-02VH
D 911	Diode	ERA15-02VH
D 912	Diode	HZS6L(B1)
D 921	Diode	HZS7L(C3)
D 922	Diode	ERA15-02VH
D 923	Diode	HZS7L(A1)
D 931	Diode	ERA15-02VH
D 932	Diode	ERA15-02VH
D 951	Diode	HZS9L(B3)
D 952	Diode	HZS9L(A2)
D 953	Diode	1SS133
D 971	Diode	HZS9L(B1)
L 101	Inductor	LAU3R3J
L 501	Ferri-Inductor	LAU2R2K
L 503	Ferri-Inductor	LAU2R2K
L 601	Inductor	LAU100K
L 602	Ferri-Inductor	LAU2R2K
L 603	Ferri-Inductor	LAU2R2K
L 731	Ferri-Inductor	LAU101K
L 801	Ferri-Inductor	LAU2R2K
L 802	Transformer	MTX9006
TH 601	Thermistor	CCX1037
X 501	Crystal Resonator 7.200MHz	CSS1379
X 601	Resonator 12.58291MHz	CSS1402
X 701	Crystal Resonator 4.332MHz	CSS1056
S 941	Switch	CSG1046
VR 731	Semi-fixed 22kΩ(B)	CCP1321
	FM/AM Tuner Unit	CWE1470
BZ 601	Buzzer	CPV1011

RESISTORS

Circuit Symbol and No.	Part Name	Part No.
R 101		RS1/10S620J
R 102		RS1/10S101J
R 103		RS1/10S101J
R 104		RS1/10S222J
R 105		RS1/10S122J
R 106		RS1/10S122J
R 107		RS1/10S181J
R 108		RS1/10S181J
R 109		RS1/10S153J
R 110		RS1/10S153J
R 111		RS1/10S222J
R 112		RS1/10S222J
R 113		RS1/10S102J
R 114		RS1/10S102J
R 115		RS1/10S473J
R 116		RS1/10S473J
R 117		RS1/10S332J
R 118		RS1/10S682J
R 119		RS1/10S103J
R 133		RS1/10S272J
R 134		RS1/10S272J
R 143		RS1/10S224J
R 144		RS1/10S224J
R 145		RS1/10S222J
R 146		RS1/10S222J
R 147		RS1/10S223J
R 148		RS1/10S223J
R 149		RS1/10S105J
R 150		RS1/10S224J
R 151		RS1/10S272J
R 152		RS1/10S272J
R 153		RS1/10S151J
R 154		RS1/10S151J
R 155		RS1/10S102J
R 201		RS1/10S103J
R 202		RS1/10S331J
R 203		RS1/10S103J
R 204		RS1/10S103J
R 259		RS1/10S681J
R 260		RS1/10S681J
R 265		RS1/10S223J
R 266		RS1/10S223J
R 268		RS1/10S0R0J
R 269		RS1/10S0R0J
R 301		RS1/10S151J
R 302		RS1/10S151J
R 303		RS1/10S104J
R 304		RS1/10S104J
R 351		RS1/10S0R0J
R 352		RS1/10S0R0J
R 353		RS1/10S0R0J
R 354		RS1/10S0R0J
R 501		RS1/10S0R0J
R 502		RS1/10S222J
R 503		RS1/10S222J
R 505		RS1/10S222J
R 506		RS1/10S472J
R 507		RS1/10S222J
R 508		RS1/10S682J
R 509		RS1/10S682J
R 510		RS1/10S561J
R 512		RS1/10S472J
R 513		RS1/10S222J
R 514		RS1/10S0R0J
R 515		RS1/10S0R0J
R 517		RS1/10S102J
R 518		RS1/10S272J
R 522		RS1/10S562J
R 523		RS1/10S472J
R 524		RS1/10S562J

Circuit Symbol and No.	Part Name	Part No.
R 525		RS1/10S473J
R 526		RS1/10S0R0J
R 527		RS1/10S681J
R 528		RS1/10S0R0J
R 550		RS1/10S0R0J
R 601		RS1/10S102J
R 602		RS1/10S473J
R 604		RS1/10S473J
R 605		RS1/10S473J
R 606		RS1/10S473J
R 607		RS1/10S473J
R 608		RS1/10S473J
R 609		RS1/10S473J
R 610		RS1/10S222J
R 611		RS1/10S222J
R 612		RS1/10S222J
R 613		RS1/10S393J
R 615		RN1/10SE2002D
R 616		RS1/10S473J
R 617		RS1/10S473J
R 618		RS1/10S473J
R 619		RS1/10S473J
R 620		RS1/10S473J
R 621		RS1/10S202J
R 622		RS1/10S102J
R 625		RS1/10S681J
R 626		RS1/10S102J
R 627		RA3C681J
R 630		RS1/10S473J
R 631		RS1/10S473J
R 632		RS1/10S393J
R 633		RS1/10S0R0J
R 634		RS1/10S0R0J
R 651		RS1/10S681J
R 652		RS1/10S681J
R 653		RS1/10S681J
R 654		RS1/10S681J
R 701		RS1/10S105J
R 702		RS1/10S222J
R 734		RS1/10S102J
R 735		RS1/10S102J
R 737		RS1/10S333J
R 738		RS1/10S0R0J
R 739		RS1/10S102J
R 740		RS1/10S102J
R 741		RS1/10S222J
R 742		RS1/10S222J
R 743		RS1/10S684J
R 744		RS1/10S681J
R 745		RS1/10S562J
R 746		RS1/10S102J
R 747		RS1/10S103J
R 748		RS1/10S562J
R 750		RS1/10S473J
R 751		RS1/10S681J
R 752		RS1/10S473J
R 753		RS1/10S473J
R 754		RA3C102J
R 801		RS1/8S222J
R 802		RS1/8S222J
R 803		RS1/8S222J
R 804		RS1/10S132J
R 805		RS1/10S822J
R 806		RS2PMF100J
R 807		RD1/4PU471J

Circuit Symbol and No.	Part Name	Part No.
R 808		RS1/10S223J
R 809		RS1/10S682J
R 810		RS1/10S103J
R 811		RS1/10S224J
R 812		RS1/10S104J
R 813		RS2PMF220J
R 814		RS1/10S222J
R 815		RD1/4PU152J
R 852		RS1/10S473J
R 866		RS1/10S473J
R 867		RS1/10S473J
R 911		RS1/10S752J
R 912		RS1/10S101J
R 913		RS1/10S392J
R 921		RS1/10S103J
R 922		RS1/10S473J
R 923		RS1/10S103J
R 924		RS1/10S103J
R 925		RS1/10S473J
R 926		RS1/10S472J
R 927		RS1/10S224J
R 941		RS1/10S102J
R 942		RS1/10S822J
R 944		RS1/8S102J
R 951		RD1/4PU221J
R 952		RD1/4PU511J
R 953		RS1/10S1R0J
R 954		RD1/4PU331J
R 955		RD1/4PU331J
R 956		RS1/10S472J
R 959		RD1/4PU102J
R 960		RS1/10S472J
R 961		RS1/10S103J
R 962		RS1/10S473J
R 963		RS1/10S473J
R 971		RD1/4PU221J
R 972		RS1/10S221J
R 973		RS1/10S472J
R 974		RS1/10S222J

CAPACITORS

Circuit Symbol and No.	Part Name	Part No.
C 101		CEJA1R0M50
C 102		CEJA1R0M50
C 103		CEJA1R0M50
C 104		CEJA1R0M50
C 105		CEJA100M16
C 106		CKSQYB104K25
C 107		CKSQYB473K25
C 108		CKSQYB473K25
C 131		CEJA2R2M50
C 132		CEJA2R2M50
C 133		CKSQYB223K50
C 134		CKSQYB223K50
C 135		CEJA4R7M35
C 136		CEJA4R7M35
C 137		CEJA2R2M50
C 138		CEJA2R2M50
C 141		CEJA1R0M50
C 142		CEJA1R0M50
C 143		CKSQYB471K50
C 144		CKSQYB223K50
C 151		CKSQYB473K25
C 152		CEJA470M10
C 153		CEJANP100M16
C 154		CEJANP100M16
C 155		CKSQYB822K50

=====Circuit Symbol and No.		===Part Name	Part No.
C	156		CKSQYB822K50
C	157		CEJA1R0M50
C	158		CEJA1R0M50
C	159		CKSQYB183K50
C	160		CKSQYB183K50
C	161		CKSQYB102K50
C	162		CKSQYB102K50
C	163		CEJANP2R2M35
C	164		CEJANP2R2M35
C	165		CKSQYB333K25
C	166		CKSQYB333K25
C	167		CEJA220M16
C	168		CEJA2R2M50
C	169		CKSQYB104K25
C	170		CCSQCH101K50
C	201		CKSQYB224K16
C	202		CKSQYB224K16
C	203		CKSQYB224K16
C	204		CKSQYB224K16
C	205		CEJA1R0M50
C	206	3300µF/16V	CCH1150
C	207		CKSQYB473K50
C	208		CEJA100M16
C	209		CEJA1R0M50
C	210		CEJA330M16
C	211		CKSQYB103K50
C	212		CKSQYB102K50
C	253		CEJA4R7M35
C	254		CEJA4R7M35
C	301		CEJA100M16
C	302		CEJA100M16
C	501		CCSQCH150K50
C	502		CCSQCH150K50
C	503		CKSQYB103K50
C	507		CKSQYB103K50
C	508		CKSQYB102K50
C	509		CEJA220M10
C	511		CKSQYB152K50
C	512		CKSQYB223K50
C	514		CKSQYB473K16
C	515		CEJA220M6R3
C	516		CKSQYB103K50
C	519		CEJA220M10
C	520		CKSQYB103K50
C	521	4.7µF/16V	CCH1250
C	522		CKSQYB103K50
C	528		CKSQYB103K50
C	529		CCSQCH101K50
C	530		CKSQYB223K50
C	532		CKSQYB473K16
C	534		CCSQCH101K50
C	601		CCSQCH200J50
C	602		CCSQCH200J50
C	603		CEJA4R7M35
C	604		CCSQCH101J50
C	605		CCSQCH101J50
C	606		CCSQCH101K50
C	607		CCSQCH101K50
C	608		CCSQCH101K50
C	651		CCSQCH821J50
C	652		CCSQCH821J50
C	653		CCSQCH101J50
C	701		CCSQCH270J50
C	702		CCSQCH270J50
C	731		CEJA4R7M35

=====Circuit Symbol and No.		===Part Name	Part No.
C	733		CKSQYB472K50
C	734		CKSQYB104K25
C	735		CKSYB105K16
C	736		CKSQYB104K25
C	737		CKSQYB222K50
C	738		CKSQYB104K25
C	739		CEJA100M16
C	740		CKSQYB103K50
C	741		CKSQYB103K50
C	742		CKSQYB223K50
C	743		CKSQYB104K25
C	802		CKSQYB104K25
C	803		CEJA100M16
C	804		CKSQYB103K50
C	805		CEJA100M16
C	806		CKSQYB103K50
C	807		CKSQYB333K25
C	808		CKSQYB333K25
C	911		CKSQYB103K50
C	912		CEJA470M10
C	913		CKSQYB472K50
C	914	1000µF/16V	CCH1312
C	921		CKSYB105K16
C	922		CKSQYB102K50
C	941		CEJA2R2M50
C	942		CKSQYB102K50
C	951		CKSQYB103K50
C	952		CEJA101M10
C	953	330µF/10V	CCH1181
C	971		CKSQYB473K25
C	972		CKSQYB102K50
C	973		CEJA101M10

D Unit Number : CWX2224
Unit Name : Control Unit

MISCELLANEOUS

IC	101	IC	UPC2572GS
IC	201	IC	UPD63702AGF
IC	301	IC	BA6997FM
IC	302	IC	BA6285FP
IC	601	IC	TA2063F
IC	701	IC	BA05SFP
Q	101	Transistor	2SD1664
Q	102	Transistor	UMD2N
D	701	Diode	1SR154-400
D	801		CL200IRX
D	802		CL200IRX
X	201	Ceramic Resonator 16.93MHz	CSS1363
S	801	Switch(Home)	CSN1028
S	802	Switch(Ciamp)	CSN1044

RESISTORS

R	101	RS1/8S100J
R	102	RS1/8S120J
R	103	RS1/16S102J
R	104	RS1/16S822J
R	105	RS1/16S682J
R	106	RS1/16S183J
R	107	RS1/16S822J
R	108	RS1/16S333J
R	109	RS1/16S683J
R	110	RS1/16S134J
R	111	RS1/16S273J
R	112	RS1/16S222J
R	113	RS1/16S103J
R	114	RS1/16S103J
R	115	RS1/16S102J

=====Circuit Symbol and No.		===Part Name	Part No.
R	116		RS1/16S163J
R	117		RS1/16S163J
R	201		RS1/16S104J
R	202		RS1/16S473J
R	501		RS1/16S0R0J
R	505		RS1/16S102J
R	507		RA3C102J
R	508		RA4C681J
R	601		RS1/16S102J
R	602		RS1/16S102J
R	603		RS1/16S223J
R	604		RS1/16S223J
R	801		RS1/8S751J
R	802		RS1/8S751J
CAPACITORS			
C	101		CEV101M6R3
C	102		CKSQYB104K16
C	103		CEV470M6R3
C	104		CKSYB334K16
C	105		CCSRCH330J50
C	106		CKSRYB103K25
C	107		CEV4R7M35
C	108		CKSQYB273K50
C	109		CCSRCH101J50
C	110		CKSQYB104K16
C	111		CKSRYB332K50
C	112		CKSQYB473K16
C	113		CKSRYB103K25
C	114		CKSRYB391K50
C	115		CCSRCH121J50
C	116		CKSRYB682K25
C	117		CKSRYB333K16
C	118		CKSYB334K16
C	119		CKSYB334K16
C	120		CKSYB334K16
C	121		CKSYB334K16
C	122		CKSQYB104K16
C	123		CKSRYB472K50
C	124		CKSQYB104K16
C	125		CCSRCH6R0D50
C	126		CKSRYB153K25
C	127		CCSRCH102J25
C	201		CKSYB334K16
C	202		CKSQYB104K16
C	203		CKSQYB104K16
C	303		CEV470M16
C	304		CKSRYB103K25
C	305		CKSRYB103K25
C	306		CKSRYB103K25
C	307		CEV100M25
C	502		CKSRYB471K50
C	601		CEV101M6R3
C	602		CKSQYB104K16
C	603		CEV4R7M35
C	604		CEV4R7M35
C	605		CKSRYB152K50
C	606		CKSRYB152K50
C	607		CEV220M6R3
C	701	22µF/6.3V	CCH1300
C	702		CKSYB334K16
C	703		CEV101M6R3
C	901		CCSRCH471J50
C	902		CCSRCH271J50
C	903		CCSRCH471J50
C	904		CCSRCH101J50

=====Circuit Symbol and No.		===Part Name	Part No.

KEYBOARD UNIT
Consists of
Keyboard PCB
Switch PCB

C F Unit Number : CWM5632
Unit Name : Keyboard Unit(DEH-P645R/EW)

MISCELLANEOUS			
IC	1801	IC	PD6197A
IC	1802		RS-140
D	1801	Diode	DA204K
D	1802	Diode	DA204K
D	1821	LED	CL220PGC
D	1822	LED	CL220PGC
D	1825	LED	CL170PGCD
D	1826	LED	CL170PGCD
D	1827	LED	CL170PGCD
D	1828	LED	CL170PGCD
D	1829	LED	CL170PGCD
D	1830	LED	CL170PGCD
D	1831	LED	CL170PGCD
D	1832	LED	CL170PGCD
D	1833	LED	CL170PGCD
D	1834	LED	CL170PGCD
D	1836	LED	CL170PGCD
D	1837	LED	CL170PGCD
D	1838	LED	CL170PGCD
D	1839	LED	CL170PGCD
D	1840	LED	CL170PGCD
D	1841	LED	CL170PGCD
D	1842	LED	CL170PGCD
D	1843	LED	CL170PGCD
X	1801	Resonator 5.00MHz	CSS1423
S	801	Switch	CSN1027
S	1801		CSG1085
S	1802		CSG1086
S	1803	Switch	CSG1041
S	1804		CSG1084
S	1805		CSG1086
S	1806	Switch	CSG1041
S	1807	Switch	CSG1041
S	1808	Switch	CSG1041
S	1809		CSG1085
S	1810		CSG1084
S	1811		CSG1085
S	1812	Switch	CSG1041
S	1813	Switch	CSG1041
S	1814	Switch	CSG1041
S	1815		CSG1061
S	1816	Switch	CSG1041
S	1817	Switch	CSG1041
S	1818	Switch	CSG1041
S	1819	Switch	CSG1041
S	1820	Switch	CSG1041
S	1821	Switch	CSG1041
		LCD	CAW1458
RESISTORS			
R	1801		RS1/8S222J
R	1802		RS1/8S222J
R	1803		RS1/10S472J
R	1804		RS1/10S121J
R	1805		RS1/10S2R2J
R	1812		RS1/10S0R0J
R	1815		RS1/10S0R0J
R	1816		RS1/10S0R0J
R	1821		RS1/8S101J
R	1822		RS1/8S181J

Circuit Symbol and No.	Part Name	Part No.
R 1823		RS1/8S101J
R 1824		RS1/8S181J
R 1825		RS1/8S101J
R 1826		RS1/8S181J
R 1827		RS1/8S101J
R 1828		RS1/8S121J
R 1829		RS1/8S101J
R 1830		RS1/8S181J
R 1831		RS1/8S201J
R 1832		RS1/8S221J
R 1833		RS1/8S101J
R 1834		RS1/8S181J
R 1835		RS1/8S101J
R 1836		RS1/8S181J
R 1837		RS1/8S101J
R 1838		RS1/8S181J
R 1839		RS1/8S101J
R 1840		RS1/8S181J

CAPACITORS

C 1801		CKSQYB104K50
C 1802		CEV100M16
C 1803		CKSQYB104K25
C 1804		CKSQYB104K25
C 1805		CKSQYB104K50
C 1806		CKSQYB104K25

KEYBOARD UNIT
Consists of
Keyboard PCB
Switch PCB

C F Unit Number : CWM5638
Unit Name : Keyboard Unit(DEH-P545R/EW)

MISCELLANEOUS

IC 1801	IC	PD6197A
IC 1802		RS-140
D 1801	Diode	DA204K
D 1802	Diode	DA204K
D 1821	LED	CL220PGC
D 1822	LED	CL220PGC
D 1825	LED	CL170PGCD
D 1826	LED	CL170PGCD
D 1827	LED	CL170PGCD
D 1828	LED	CL170PGCD
D 1829	LED	CL170PGCD
D 1830	LED	CL170PGCD
D 1831	LED	CL170PGCD
D 1832	LED	CL170PGCD
D 1833	LED	CL170PGCD
D 1834	LED	CL170PGCD
D 1836	LED	CL170PGCD
D 1837	LED	CL170PGCD
D 1838	LED	CL170PGCD
D 1839	LED	CL170PGCD
D 1840	LED	CL170PGCD
D 1841	LED	CL170PGCD
D 1842	LED	CL170PGCD
D 1843	LED	CL170PGCD
X 1801	Resonator 5.00MHz	CSS1423
S 801	Switch	CSN1027
S 1801		CSG1085
S 1802		CSG1086
S 1803	Switch	CSG1041
S 1804		CSG1084
S 1805		CSG1086
S 1806	Switch	CSG1041
S 1807	Switch	CSG1041
S 1808	Switch	CSG1041
S 1809		CSG1085
S 1810		CSG1084
S 1811		CSG1085
S 1812	Switch	CSG1041
S 1813	Switch	CSG1041
S 1814	Switch	CSG1041
S 1815		CSG1061
S 1816	Switch	CSG1041
S 1817	Switch	CSG1041
S 1818	Switch	CSG1041
S 1819	Switch	CSG1041
S 1820	Switch	CSG1041
S 1821	Switch	CSG1041
	LCD	CAW1461

RESISTORS

R 1801	RS1/8S222J
R 1802	RS1/8S222J
R 1803	RS1/10S472J
R 1804	RS1/10S121J
R 1805	RS1/10S2R2J
R 1812	RS1/10S0R0J
R 1815	RS1/10S0R0J
R 1816	RS1/10S0R0J
R 1821	RS1/8S101J
R 1822	RS1/8S181J
R 1823	RS1/8S101J
R 1824	RS1/8S181J
R 1825	RS1/8S101J
R 1826	RS1/8S181J
R 1827	RS1/8S101J
R 1828	RS1/8S121J
R 1829	RS1/8S101J
R 1830	RS1/8S181J
R 1831	RS1/8S201J
R 1832	RS1/8S221J
R 1833	RS1/8S101J
R 1834	RS1/8S181J
R 1835	RS1/8S101J
R 1836	RS1/8S181J
R 1837	RS1/8S101J
R 1838	RS1/8S181J
R 1839	RS1/8S101J
R 1840	RS1/8S181J

CAPACITORS

C 1801	CKSQYB104K50
C 1802	CEV100M16
C 1803	CKSQYB104K25
C 1804	CKSQYB104K25
C 1805	CKSQYB104K50
C 1806	CKSQYB104K25

=====Circuit Symbol and No.	===Part Name	Part No.

KEYBOARD UNIT
Consists of
Keyboard PCB
Switch PCB

C F Unit Number : CWM5639
Unit Name : Keyboard Unit(DEH-P544R/EW)

MISCELLANEOUS

IC	1801	IC	PD6197A
IC	1802		RS-140
D	1801	Diode	DA204K
D	1802	Diode	DA204K
D	1821	LED	CL220D
D	1822	LED	CL220D
D	1825	LED	CL170DCD
D	1826	LED	CL170DCD
D	1827	LED	CL170DCD
D	1828	LED	CL170DCD
D	1829	LED	CL170DCD
D	1830	LED	CL170DCD
D	1831	LED	CL170DCD
D	1832	LED	CL170DCD
D	1833	LED	CL170DCD
D	1834	LED	CL170DCD
D	1836	LED	CL170DCD
D	1837	LED	CL170DCD
D	1838	LED	CL170DCD
D	1839	LED	CL170DCD
D	1840	LED	CL170DCD
D	1841	LED	CL170DCD
D	1842	LED	CL170DCD
D	1843	LED	CL170DCD
X	1801	Resonator 5.00MHz	CSS1423
S	801	Switch	CSN1027
S	1801		CSG1079
S	1802		CSG1080
S	1803	Switch	CSG1041
S	1804		CSG1078
S	1805		CSG1080
S	1806	Switch	CSG1041
S	1807	Switch	CSG1041
S	1808	Switch	CSG1041
S	1809		CSG1079
S	1810		CSG1078
S	1811		CSG1079
S	1812	Switch	CSG1041
S	1813	Switch	CSG1041
S	1814	Switch	CSG1041
S	1815		CSG1061
S	1816	Switch	CSG1041
S	1817	Switch	CSG1041
S	1818	Switch	CSG1041
S	1819	Switch	CSG1041
S	1820	Switch	CSG1041
S	1821	Switch	CSG1041
		LCD	CAW1464

RESISTORS

R	1801		RS1/8S222J
R	1802		RS1/8S222J
R	1803		RS1/10S472J
R	1804		RS1/10S121J
R	1805		RS1/10S2R2J
R	1812		RS1/10S0R0J
R	1815		RS1/10S0R0J
R	1816		RS1/10S0R0J
R	1821		RS1/8S101J
R	1822		RS1/8S181J
R	1823		RS1/8S101J
R	1824		RS1/8S181J
R	1825		RS1/8S101J
R	1826		RS1/8S181J
R	1827		RS1/8S101J
R	1828		RS1/8S121J
R	1829		RS1/8S101J
R	1830		RS1/8S181J
R	1831		RS1/8S201J
R	1832		RS1/8S221J
R	1833		RS1/8S101J
R	1834		RS1/8S181J
R	1835		RS1/8S101J
R	1836		RS1/8S181J
R	1837		RS1/8S101J
R	1838		RS1/8S181J
R	1839		RS1/8S101J
R	1840		RS1/8S181J

CAPACITORS

C	1801	CKSQYB104K50
C	1802	CEV100M16
C	1803	CKSQYB104K25
C	1804	CKSQYB104K25
C	1805	CKSQYB104K50
C	1806	CKSQYB104K25

KEYBOARD UNIT
Consists of
Keyboard PCB
Switch PCB

C F Unit Number : CWM5635
Unit Name : Keyboard Unit(DEH-P443R/EW)

MISCELLANEOUS

IC	1801	IC	PD6197A
D	1801	Diode	DA204K
D	1802	Diode	DA204K
D	1821	LED	CL220D
D	1822	LED	CL220D
D	1825	LED	CL170DCD
D	1827	LED	CL170DCD
D	1828	LED	CL170DCD
D	1829	LED	CL170DCD
D	1831	LED	CL170DCD
D	1832	LED	CL170DCD
D	1834	LED	CL170DCD
D	1836	LED	CL170DCD
D	1837	LED	CL170DCD
D	1838	LED	CL170DCD
D	1839	LED	CL170DCD
D	1840	LED	CL170DCD
D	1841	LED	CL170DCD
D	1842	LED	CL170DCD
D	1843	LED	CL170DCD
X	1801	Resonator 5.00MHz	CSS1423
S	801	Switch	CSN1027
S	1801		CSG1079
S	1802		CSG1080
S	1803	Switch	CSG1041

=====Circuit Symbol and No.		===Part Name	Part No.
S	1804		CSG1078
S	1805		CSG1078
S	1806	Switch	CSG1041
S	1807	Switch	CSG1041
S	1808	Switch	CSG1041
S	1809		CSG1079
S	1810		CSG1078
S	1811		CSG1079
S	1812	Switch	CSG1041
S	1813	Switch	CSG1041
S	1814	Switch	CSG1041
S	1815		CSG1061
S	1816	Switch	CSG1041
S	1817	Switch	CSG1041
S	1818	Switch	CSG1041
S	1819	Switch	CSG1041
S	1820	Switch	CSG1041
S	1821	Switch	CSG1041
		LCD	CAW1464

RESISTORS

R	1801		RS1/8S222J
R	1802		RS1/8S222J
R	1812		RS1/10S0R0J
R	1815		RS1/10S0R0J
R	1816		RS1/10S0R0J
R	1821		RS1/8S201J
R	1822		RS1/8S221J
R	1823		RS1/8S201J
R	1824		RS1/8S221J
R	1825		RS1/8S201J
R	1826		RS1/8S221J
R	1827		RS1/8S101J
R	1828		RS1/8S121J
R	1829		RS1/8S101J
R	1830		RS1/8S181J
R	1831		RS1/8S201J
R	1832		RS1/8S221J
R	1833		RS1/8S101J
R	1834		RS1/8S181J
R	1835		RS1/8S101J
R	1836		RS1/8S181J
R	1837		RS1/8S101J
R	1838		RS1/8S181J
R	1839		RS1/8S201J
R	1840		RS1/8S221J
R	1841		RS1/10S0R0J
R	1842		RS1/10S0R0J
R	1843		RS1/10S0R0J
R	1844		RS1/10S0R0J
R	1845		RS1/10S0R0J

CAPACITORS

C	1801		CKSQYB104K50
C	1803		CKSQYB104K25
C	1804		CKSQYB104K25
C	1805		CKSQYB104K50
C	1806		CKSQYB104K25

=====Circuit Symbol and No.		===Part Name	Part No.
E		Unit Number :	
		Unit Name : Photo Unit	
Q	1	Photo-transistor	CPT-230S-X
Q	2	Photo-transistor	CPT-230S-X

Miscellaneous Parts List

		Pickup Unit(Service)	CXX1230
M	1	Motor Unit	CXA8912
M	2	CRG Motor Unit	CXA8986
M	3	Load Motor Unit	CXA8702

6. ADJUSTMENT

6.1 TUNER ADJUSTMENT

● **Connection Diagram**

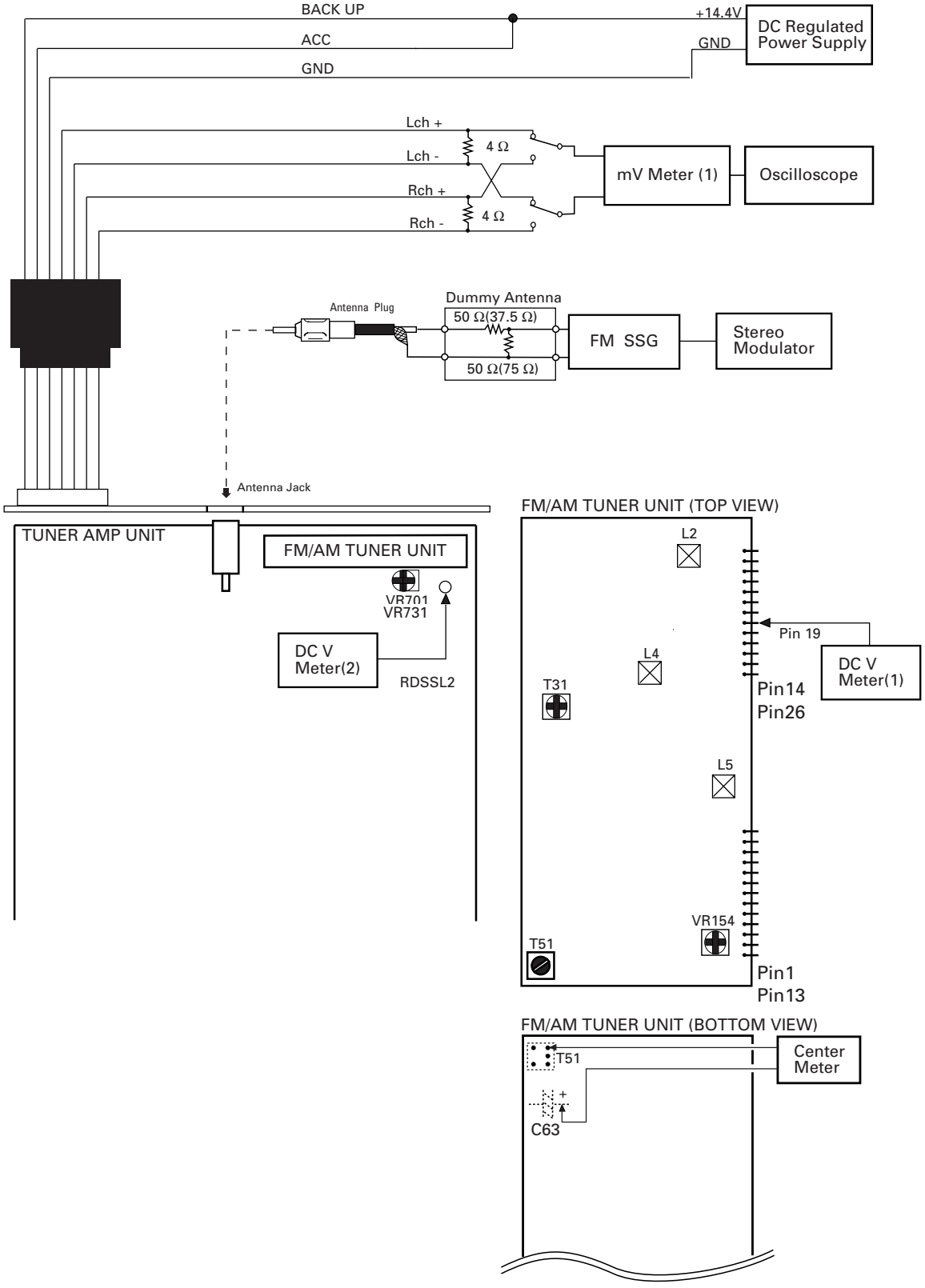


Fig. 23

FM ADJUSTMENT

Modulation M:MONO MOD., 400Hz 30%(22.5kHz Dev.)
S:STEREO MOD., 1kHz, L or R=30%(20.25kHz+7.5kHz Dev.)

NOTE:Before proceeding to further adjustments after switching power ON, let the tuner run for ten minutes to allow the circuits to stabilize.

	No.	FM SSG		Displayed	Adjustment	Adjustment Method
		Frequency(MHz)	Level(dBf)	Frequency(MHz)	Point	(Switch Position)
TUN Volt	1	•••••	•••••	108.0	L5	DC V Meter(1) : 6V
IF	1	98.1 M	60	98.1	T51	Center Meter : 0
ANT Coil	1	98.1 M	5	98.1	L2	mV Meter(1) : Maximum
RF Coil	1	98.1 M	5	98.1	L4	mV Meter(1) : Maximum
Image	1	129.3 M	60—80	107.9	TC1	mV Meter(1) : Minimum
IFT	1	98.1 M	5	98.1	T31	mV Meter(1) : Maximum (STEREO MODE)
ARC	1	98.1 S	39	98.1	VR154	mV Meter(1) : Separation 5dB (STEREO MODE)

RDS SL ADJUSTMENT

	No.	FM SSG		Displayed	Adjustment	Adjustment Method
		Frequency(MHz)	Level(dBf)	Frequency(MHz)	Point	(Switch Position)
	1	106.1 M	52	106.1	VR731	DC V Meter(2) : 2.25V±0.05V

6.2 CD SECTION

1)Precautions

This unit uses a single power supply (+5V) for the regulator. The signal reference potential, therefore, is connected to REFO(approx. 2.5V) instead of GND.

If REFO and GND are connected to each other by mistake during adjustments, not only will it be impossible to measure the potential correctly, but the servo will malfunction and a severe shock will be applied to the pick-up. To avoid this, take special note of the following.

Do not connect the negative probe of the measuring equipment to REFO and GND together. It is especially important not to connect the channel 1 negative probe of the oscilloscope to REFO with the channel 2 negative probe connected to GND.

Since the frame of the measuring instrument is usually at the same potential as the negative probe, change the frame of the measuring instrument to floating status.

If by accident REFO comes in contact with GND, immediately switch the regulator or power OFF.

• Always make sure the regulator is OFF when connecting and disconnecting the various filters and wiring required for measurements.

• Before proceeding to further adjustments and measurements after switching regulator ON, let the player run for about one minute to allow the circuits to stabilize.

• Since the protective systems in the unit's software are rendered inoperative in test mode, be very careful to avoid mechanical and /or electrical shocks to the system when making adjustment.

• Test mode starting procedure

Switch ACC, back-up ON while pressing the **4** and **6** keys together.

• Test mode cancellation

Switch ACC, back-up OFF.

• Disc detection during loading and eject operations is performed by means of a photo transistor in this unit.Consequently, if the inside of the unit is exposed to a strong light source when the outer casing is removed for repairs or adjustment, the following malfunctions may occur.

*During PLAY, even if the eject button is pressed,the disc will not be ejected and the unit will remain in the PLAY mode.

*The unit will not load a disc.

When the unit malfunctions this way, either re-position the light source, move the unit or cover the photo transistor.

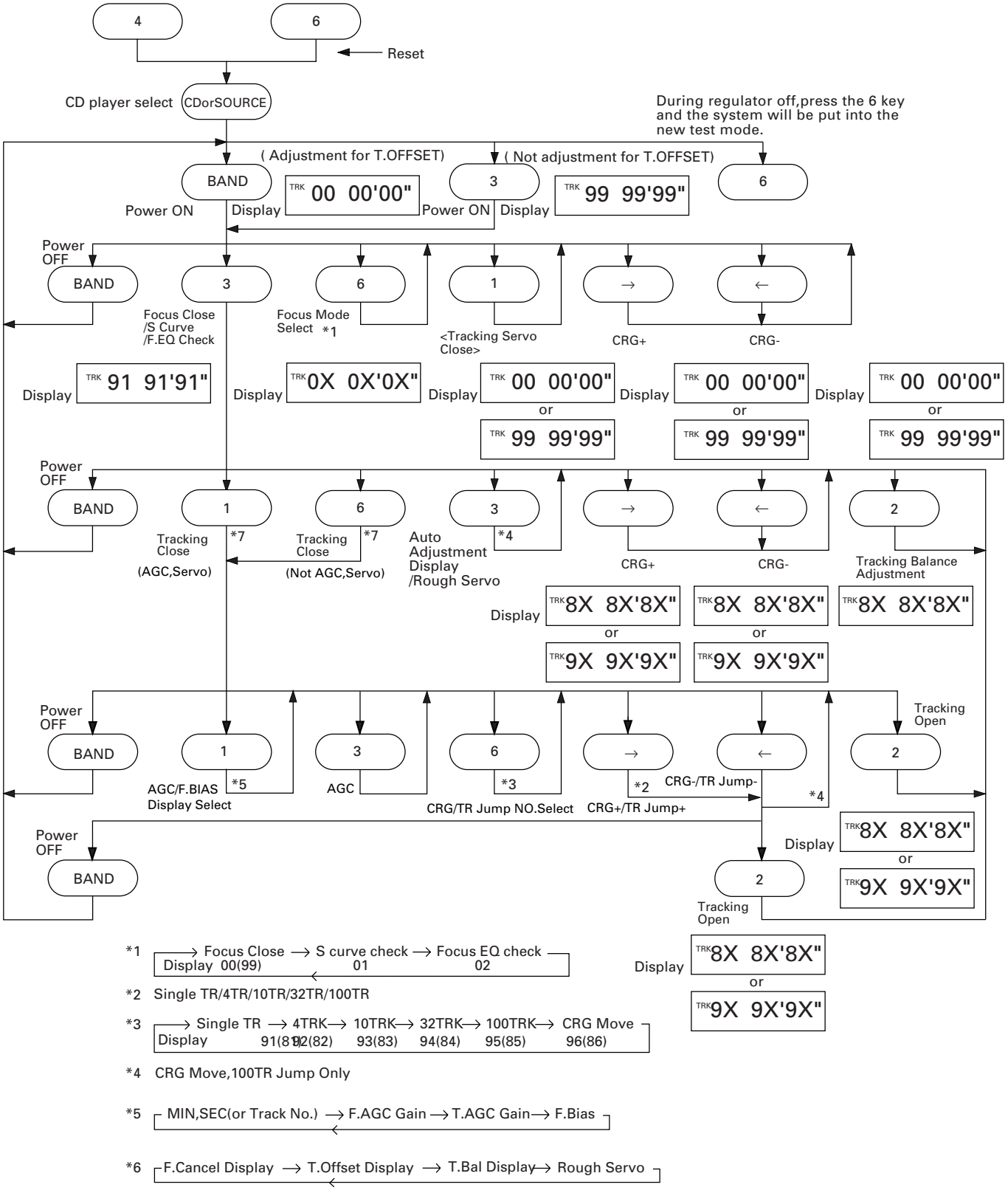
• When loading and unloading discs during adjustment procedures, always wait for the disc to be properly clamped or ejected before pressing another key. Otherwise, there is a risk of the actuator being destroyed.

• Turn power off when pressing the button TR+ or the button TR- key for focus search in the test mode. (Or else lens may stick and the actuator may be damaged.)

• SINGLE/4TRK/10TRK/32TRK will continue to operate even after the key is released.Tracking is closed the moment C-MOVE is released.

• JUMP MODE resets to SINGLE as soon as power is switched OFF.

● Flow Chart



*1 → Focus Close → S curve check → Focus EQ check →
Display 00(99) 01 02

*2 Single TR/4TR/10TR/32TR/100TR

*3 → Single TR → 4TRK → 10TRK → 32TRK → 100TRK → CRG Move →
Display 91(81) 92(82) 93(83) 94(84) 95(85) 96(86)

*4 CRG Move,100TR Jump Only

*5 MIN,SEC(or Track No.) → F.AGC Gain → T.AGC Gain → F.Bias

*6 F.Cancel Display → T.Offset Display → T.Bal Display → Rough Servo

6.3 CHECKING THE GRATING AFTER CHANGING THE PICKUP UNIT

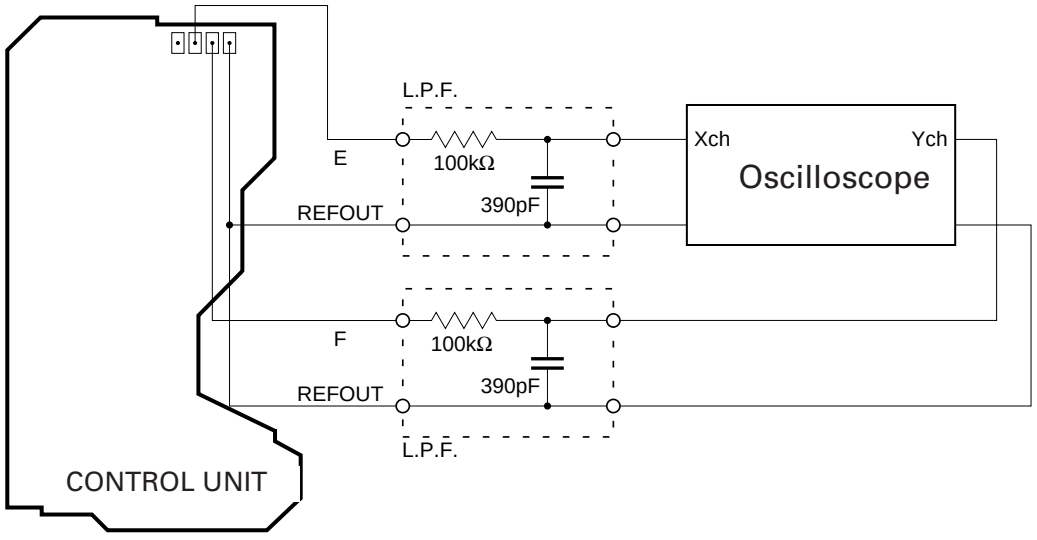
• **Note :**
Unlike previous CD mechanism modules the grating angle of the PU unit cannot be adjusted after the PU unit is changed. The PU unit in the CD mechanism module is adjusted on the production line to match the CD mechanism module and is thus the best adjusted PU unit for the CD mechanism module. Changing the PU unit is thus best considered as a last resort. However, if the PU unit must be changed, the grating should be checked using the procedure below.

• **Purpose :**
To check that the grating is within an acceptable range.

• **Symptoms of Mal-adjustment :**
If the grating is off by a large amount symptoms such as being unable to close tracking, being unable to perform track search operations, or track searching taking a long time, may appear.

• **Method :**

• Measuring Equipment	• Oscilloscope, Two L.P.F.
• Measuring Points	• E, F, REFOUT
• Disc	• ABEX TCD-784
• Mode	• TEST MODE



• **Checking Procedure**
1. In test mode, load the disc and switch the 5V regulator on.
2. Using the **TR+** and **TR-** buttons, move the PU unit to the innermost track.
3. Press key **3** to close focus, the display should read "91". Press key **2** to implement the tracking balance adjustment the display should now read "81". Press key **3** 4 times. The display will change, returning to "81" on the fourth press.
4. As shown in the diagram above, monitor the LPF outputs using the oscilloscope and check that the phase difference is within 75° . Refer to the photographs supplied to determine the phase angle.
5. If the phase difference is determined to be greater than 75° try changing the PU unit to see if there is any improvement. If, after trying this a number of times, the grating angle does not become less than 75° then the mechanism should be judged to be at fault.

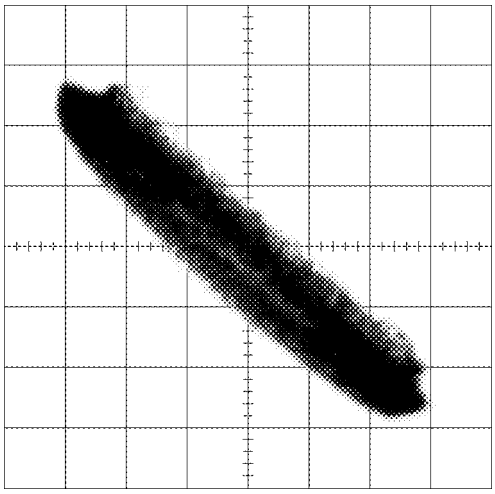
• **Note**
Because of eccentricity in the disc and a slight misalignment of the clamping center the grating waveform may be seen to "wobble" (the phase difference changes as the disc rotates). The angle specified above indicates the average angle.

• **Hint**
Reloading the disc changes the clamp position and may decrease the "wobble".

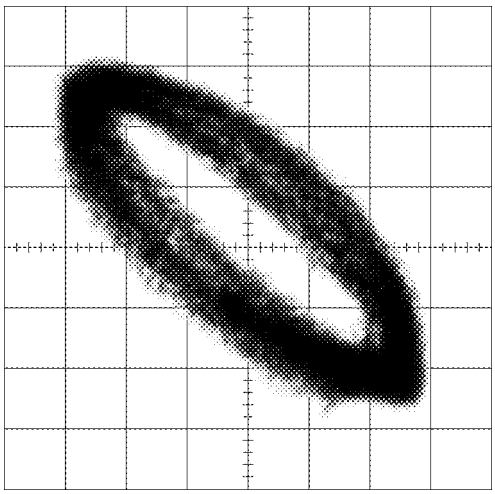
Grating waveform

Ech → Xch 20mV/div, AC
Fch → Ych 20mV/div, AC

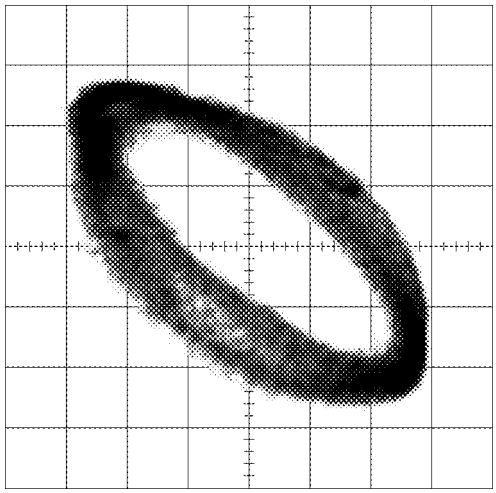
0˚



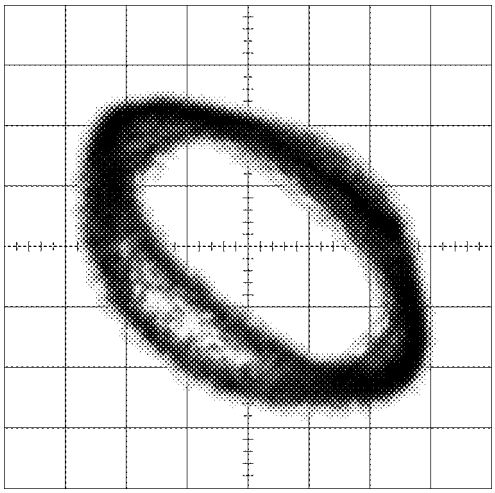
30˚



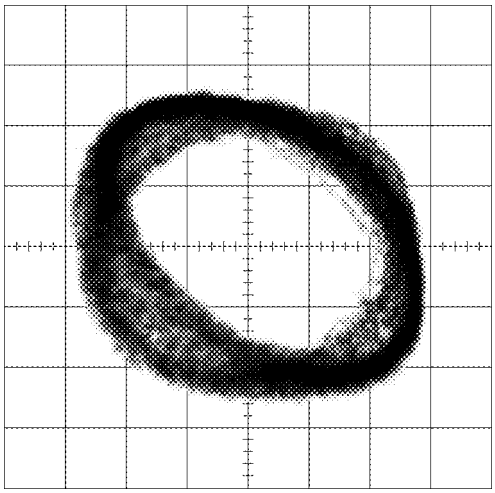
45˚



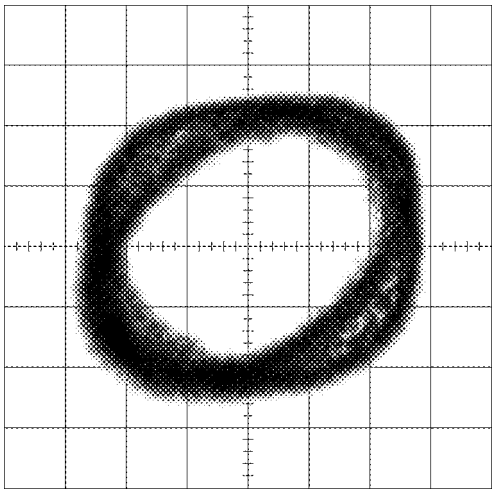
60˚



75˚



90˚



7. GENERAL INFORMATION

7.1 PARTS

7.1.1 IC

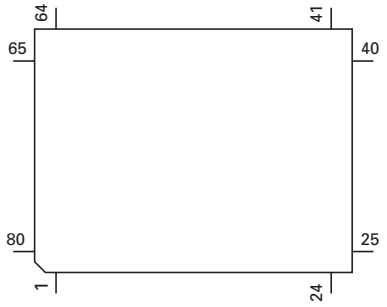
● **Pin Functions (UPD63702AGF)**

Pin No.	Pin Name	I/O	Function and Operation
1	D.VDD		Supplies current of positive voltage to the logic circuits
2	$\overline{RST}$	I	System reset input pin
3	AO	I	Microcomputer interface AO="L": $\overline{STB}$ active and set to address register AO="H": $\overline{STB}$ active and set to parameter
4	$\overline{STB}$	I	Signal to latch serial data within the LSI
5	$\overline{SCK}$	I	Clock input pin to input and output serial data
6	SO	O	Outputs serial data and status signal
7	SI	I	Serial data input pin
8	D.GND		Logic circuit GND
9	X.GND		Crystal oscillation circuit GND
10	XTAL	I	Crystal oscillator connection pin
11	$\overline{XTAL}$	O	Crystal oscillator connection pin
12	X.VDD		Supplies current of positive voltage to the crystal oscillation circuit
13	DA.VDD		Supplies current of positive voltage to the D/A converter
14	R+	O	Right channel analog audio data output pin
15	R-	O	Right channel analog audio data output pin
16,17	DA.GND		D/A converter GND
18	L-	O	Left channel analog audio data output pin
19	L+	O	Left channel analog audio data output pin
20	DA.VDD		Supplies current of positive voltage to the D/A converter
21	D.VDD		Supplies current of positive voltage to logic circuit
22	FLAG	O	Flag output pin to indicate that audio data currently being output consists of noncorrectable data
23	WDCK	O	Pin to output double the frequency of LRCK
24	C16M	O	Pin to output the clock
25	EMPH	O	Output pin for the pre-emphasis data in the sub-Q code
26	DIN	I	Input pin for serial audio data
27	DOUT	O	Output pin for the serial audio data
28	SCKO	O	Output pin for the clock for the serial audio data
29	LRCK	O	Signals to distinguish the right and left channels of the audio data output from DOUT. Frequency is 44.1kHz at 50% duty at normal regeneration
30	TX	O	Output pin for the digital audio interface data
31	CTLV	I	Oscillation control pin for high-frequency clock generation VCO used for the digital PLL upon regeneration at fast speed of 2- or 4-fold
32	POUT	O	Output point for phase comparison
33	D.GND		GND for the logic circuit
34	VCO	I	Input pin for the inverter
35	$\overline{VCO}$	O	Output pin for the inverter
36	D.VDD		Supplies current of positive voltage to the logic circuit
37	PLCK	O	Pin for monitoring the bit clock
38	LOCK	O	Indicates "H" when the synchronized pattern detection signal matches the frame counter output at the EFM recovery modulation, and "L" when they don't match
39	WFCK	O	Minute-cycle signal for the bit clock, the signal indicates the cycle of 1 frame (approx. 7.35kHz)
40	RFCK	O	Minute-cycle signal for the clock, the signal indicates cycle of 1 frame (approx. 7.35kHz)
41	D.GND		GND for the logic circuit
42,43	TEST0,1	I	Test pins
44,45	TM2, TM4	I	Pins for controlling regeneration at fast speed of 2- or 4-fold
46-49	T4-T7	I	Test pins
50,51	C1D1, C1D2	O	Output pin for indicating the C1 error correction results

Pin No.	Pin Name	I/O	Function and Operation
52-54	C2D1-C2D3	O	Output pin for indicating the C2 error correction results
55	D.VDD		Supplies current of positive voltage to the logic circuit
56	SFSY	O	Outputs 1 word of the subcode. Generally, 1 cycle is approx 136 micro seconds
57	SBSY	O	The signal indicates the beginning of the subcode block. The SFSY signal is output at high level every 98 times
58	SBSO	O	Output pin for the subcode data
59	SBCK	I	Input pin for the clock signal for read-out of the subcode data
60	A.GND		GND for the analog circuit
61	MD	O	Output pin for the spindle drive
62	SD	O	Output pin for the sled drive
63	TD	O	Output pin for the tracking drive
64	FD	O	Output pin for the focus drive
65	FBAL	O	Output pin for the focus balance control
66	TBAL	O	Output pin for the tracking balance control
67	A.VDD		Supplies current of positive voltage to the analog circuit
68	TBC	I	Switches coefficient banks for the tracking filter
69	EFM	I	Input pin for the EFM signal
70	HOLD	I	Input pin for the hold control signal
71	RFOK	I	Input pin for the RFOK signal
72	MIRR	I	Input pin for the MIRR signal
73	A.GND		GND for the analog circuit
74	HOME	I	Home position detector input
75	VR1	I	The signal input through these pins is digitized to 8-bit by the A/D converter, which by operation of the assigned register, can be read into the microcomputer
76	FE	I	Inputs a focus-error signal from the RF amplifier
77	TE	I	Inputs a tracking-error signal from the RF amplifier
78	TEC	I	Input pin for the tracking comparator
79	REFOUT	O	Output point for midpoint potential for the A/D converter for the LSI portion
80	A.VDD		Supplies current of accurate voltage to the analog circuit

IC's marked by* are MOS type.
Be careful in handling them because they are very liable to be damaged by electrostatic induction.

*UPD63702AGF



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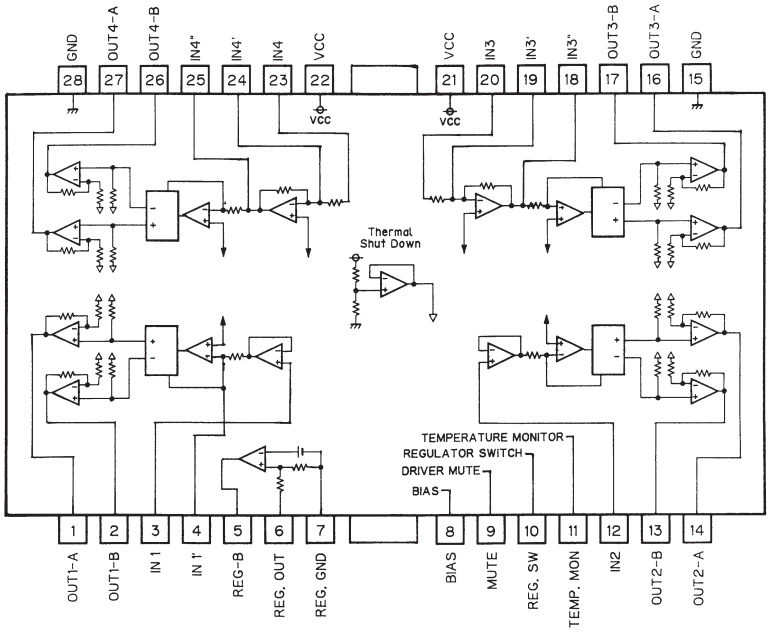

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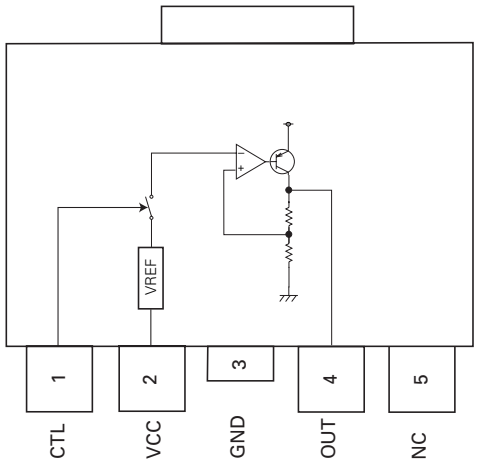

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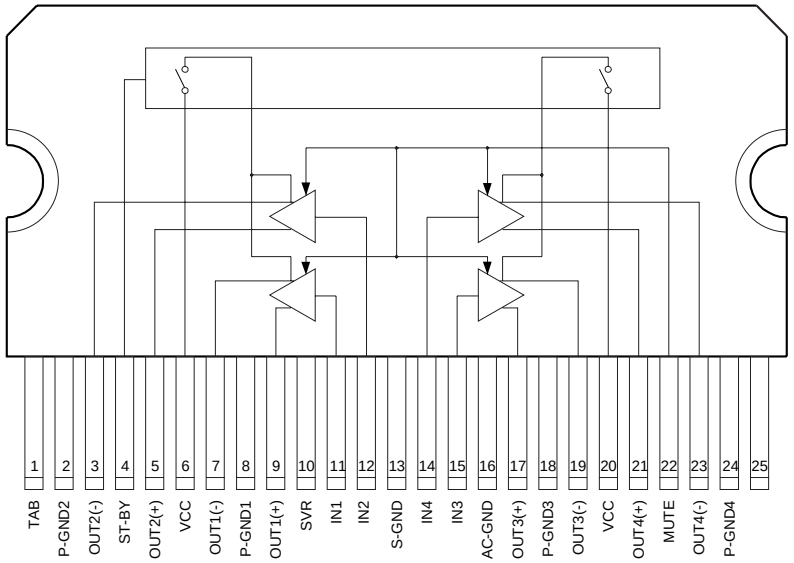

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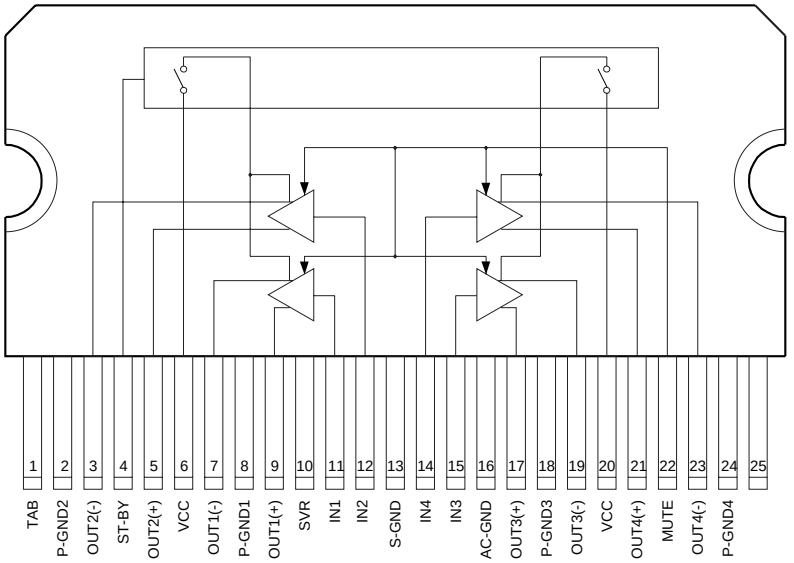
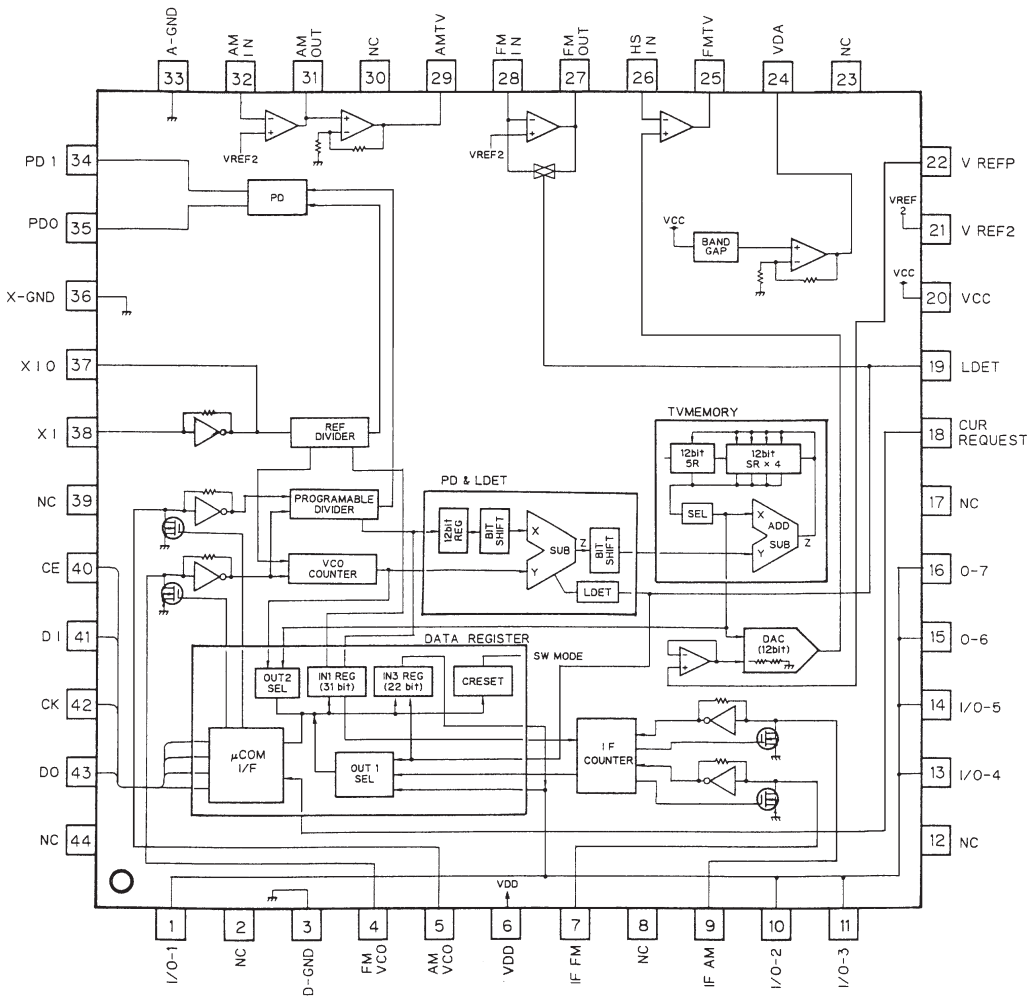


PM2007A



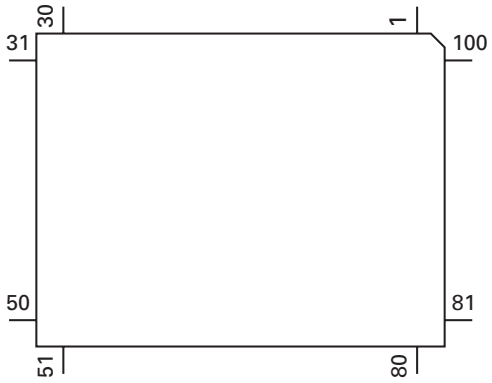
● Pin Functions(PD4885A)

Pin No.	Pin Name	I/O	Function and Operation
1	$\overline{\text{SWVDD}}$	O	Grille power supply control output
2	$\overline{\text{DSENS}}$	I	Grille detach sense input
3	NC		Not used
4	$\overline{\text{ISENS}}$	I	Illumination sense input
5	TESTIN	I	Test program mode input
6	$\overline{\text{DRST}}$	O	Reset output
7	ERROR	O	Disapprove of error correction output
8	$\overline{\text{SK}}$	I	SK signal input
9	RECIVE	I	During RDS data reception input
10	$\overline{\text{L}}$/S	O	Time constant control output
11	$\overline{\text{RESET}}$	I	Reset input
12	XT2		Open
13	XT1	I	Connect to VSS
14	VSS		GND
15	X2		Crystal oscillator connection pin
16	X1	I	Crystal oscillator connection pin (12.582912MHz)
17	REGC		Connect to VDD
18	REGOFF		Connect to VDD
19	VDD		Power supply
20	ILMPW	O	Illumination power supply control output
21	SYSPWR	O	System power control output
22	$\overline{\text{ADPW}}$	O	A/D converter power output
23	LCDPW	O	LCD back light power supply control output

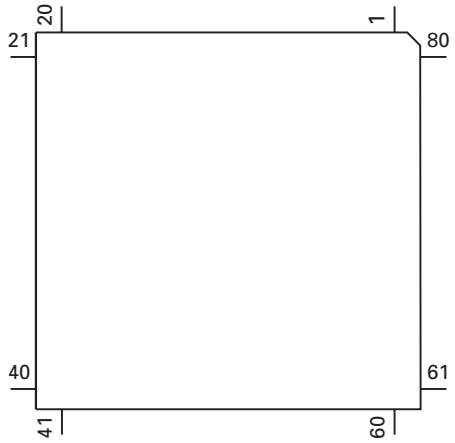
Pin No.	Pin Name	I/O	Function and Operation
24	IPPW	O	Power supply control output for IP BUS interface IC
25	ASENBO	O	Slave power supply control output
26	AMPW	O	AM power output
27	TELIN	I	TEL mute signal input
28	MUTE	O	Mute output
29	DIM	O	Dimmer select output
30	FIEOUT	O	FIE ON/OFF control output
31	SUBW1	O	Sub woofer control 1 output
32	SUBW0	O	Sub woofer control 0 output
33	VCK	O	Clock output for electronic volume
34	VST	O	Strobe pulse output for electronic volume
35	VDT	O	Data output for electronic volume
36	$\overline{\text{TMUTE}}$	O	Tuner mute output
37	NC		Not used
38	SD	I	SD input
39	$\overline{\text{ST}}$	I	FM stereo input
40	VSS		GND
41	VDD		Power supply
42	$\overline{\text{MDSENS}}$	I	Modulation detect input
43	$\overline{\text{MUTCNT}}$	I	NF mute control input
44	$\overline{\text{RDSLK}}$	I	RDS LK signal input
45	$\overline{\text{CURRQ}}$	O	Tuner voltage FIX output
46	RDT	I	Data input
47	DRELAY	O	External relay output
48	DRSENS	I	Door open/close sense input
49	DRSYS	O	Door system select output
50	$\overline{\text{DLED}}$	O	Alarm LED output
51	DLSENS	I	Door lock sense input
52	STCUT	O	Ignition cut off output
53	$\overline{\text{MOSENS}}$	I	Motion/window damage sensor input
54	CD5VON	O	CD +5V power supply control output
55	CONT	O	Servo driver power supply control output
56	VDCONT	O	VD control output
57	CDMUTE	O	CD mute output
58	CDEJET	O	Load motor eject control output
59	CDLOAD	O	LOAD motor loading control output
60	LOCK	I	Spindle lock detector input
61	FOK	I	FOK signal input
62	PCL	O	Clock adjustment output
63	MIRR	I	Mirror detector input
64	$\overline{\text{CLAMP}}$	I	Disc clamp sense input
65	$\overline{\text{XSCK}}$	O	LSI clock output
66	XSI	I	LSI data input
67	XSO	O	LSI data output
68	XAO	O	CD LSI data discernment control signal output
69	$\overline{\text{XRST}}$	O	CD LSI reset output
70	$\overline{\text{XSTB}}$	O	CD LSI strobe output
71	VCAOUT	O	Sub woofer volume control output
72	SUBMUTE	O	Sub woofer mute output
73	TEST	I	Test terminal
74	SL	I	Signal level input
75	MODEL1	I	Model select input
76	CL	I	Synchronizing signal input of display data latch
77	NL	I	Noise level input
78	EJTSNS	I	Disc EJECT position detect input
79	DSCSNS	I	Disc detect input
80	VDSENS	I	VD over voltage sense input
81	TEMP	I	Temperature detector input
82,83	VDD		Power supply

Pin No.	Pin Name	I/O	Function and Operation
84	GND		GND
85	RX	I	IP BUS data input
86	TX	O	IP BUS data output
87	GND		GND
88	$\overline{\text{LDET}}$	I	PLL lock sense input
89	$\overline{\text{RCK}}$	I	RDS clock input
90	RDS57K	I	57kHzBP-OUT sense input
91	NC		Not used
92	$\overline{\text{ASENS}}$	I	ACC power sense input
93	$\overline{\text{BSENS}}$	I	Back up power sense input
94	TUNPDI	I	PLL IC data input
95	KEYDT	I	Display data input
96	DPDT	O	Display data output
97	TUNPCK	O	PLL IC clock output
98	TUNPDO	O	PLL IC data output
99	TUNPCE	O	PLL IC chip enable output
100	PEE	O	Beep tone output

*PD4885A



*PD6197A



● **Pin Functions (PD6197A)**

Pin No.	Pin Name	I/O	Function and Operation
1	VSS		GND
2	X1		Crystal oscillator connection pin
3	X0		Crystal oscillator connection pin
4	NC		Not used
5,6	MOD1,0	I	Connect to GND
7	NC		Not used
8	KYDT	O	Display/key data output
9	DPDT	I	Display/key data input
10	REMIN	I	Remote control pulse input
11,12	NC		Not used
13-16	$\overline{\text{KD4}}$-$\overline{\text{KD1}}$	I	Key data input
17-21	$\overline{\text{KS6}}$-$\overline{\text{KS2}}$	O	Key strobe output
22	NC		Not used
23	VDD		VDD
24-73	SEG0-49	O	LCD segment output
74-77	COM3-0	O	LCD common output
78	VLCD	I	LCD voltage input
79,80	V2,V1		Power supply terminal

7.1.2 DISPLAY

- **CAW1458(DEH-P645R/EW)**
- **CAW1461(DEH-P545R/EW)**
- **CAW1464(DEH-P544R/EW,DEH-P443R/EW)**

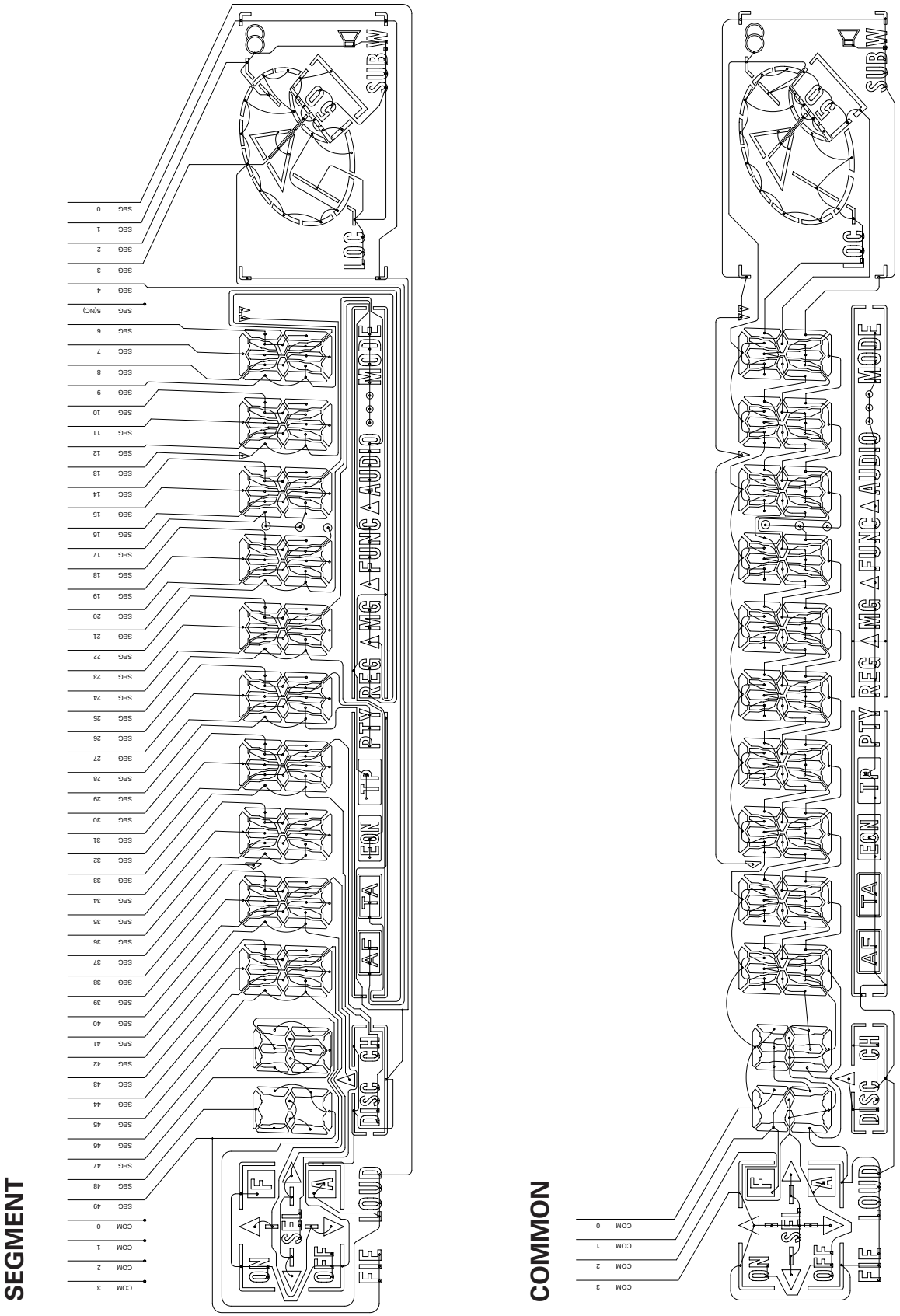


Fig. 24

7.2 DIAGNOSIS

7.2.1 DISASSEMBLY

● **Removing the Case(Not shown)**

Removing the two screws.

● **Removing the Detach Grille Assy and CD Mechanism Module**

1. A X 4

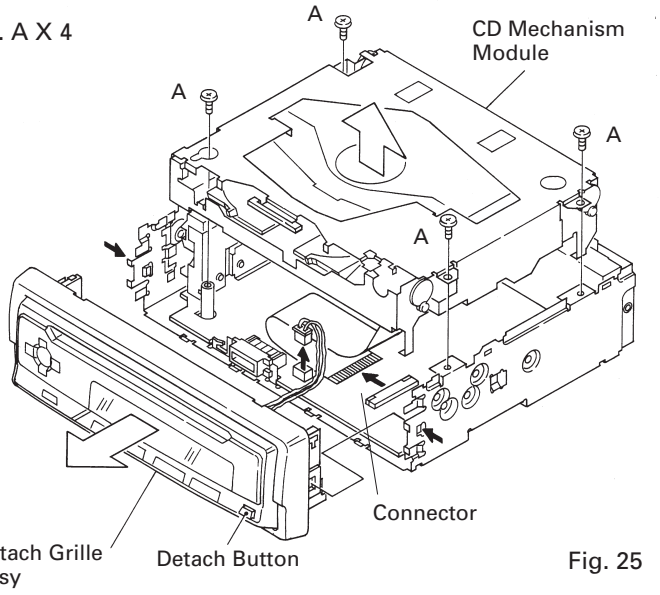


Fig. 25

● **Removing the Chassis Unit and Tuner Amp Unit**

1. A X 2
2. B X 2
3. C X 1
4. D X 1

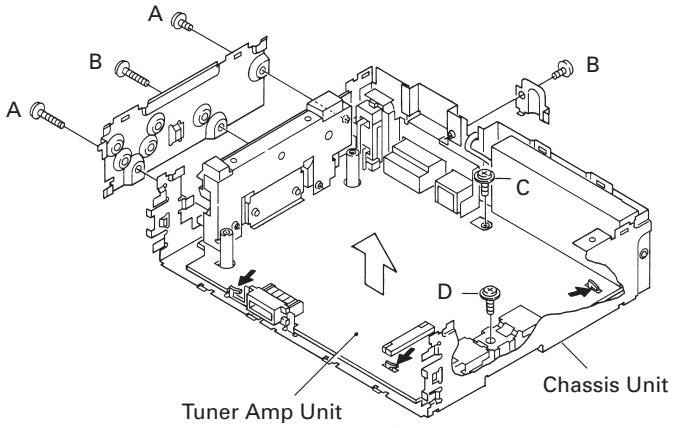


Fig. 26

7.2.2 TEST MODE

● Error Number Indication

The system enters error mode to display the cause of error with a number when the system cannot operate CD or stops operation because of an error. The purpose of this measure is to reduce frequency of calls from users asking help for problems that are caused by incorrect operation by user, as well as to assist analysis and repair in servicing.

(1) Basic means of display

An error code will be written on DMIN (minute area for display) and DSEC (second area for display) when CSMOD (CD mode area for system) is SERBORM.

The same data will be written on DMIN and DSEC.

DTNO shall be blank as before.

Display examples of the head unit

Error codes will be displayed as shown below, depending on the capability of LCD. An error number will be displayed in the place of "xx."

8-digit display ERROR-XX

6-digit display ERR-XX or Err-XX

4-digit display E-XX

With OEM products, display of error codes shall be according to the specificatins of the manufacturer.

(2) Error codes

Error code	Classification	Description	Cause / Detail
10	ELECTRIC	Carriage home failure	Carriage doesn't move to or from the innermost position →Home switch failed and/or carriage immobile
11	ELECTRIC	Focus failure	Focus failed →Defects, disc upside-down, severe vibration
12	ELECTRIC	SETUP failure Subcode failure	Spindle failed to lock or subcode unreadable →Spindle defective, defect, severe vibration
14	ELECTRIC	Mirror failure	Unrecorded CD-R The disc is upside-down, defects, vibration
17	ELECTRIC	Set up failure	AGC protect failed →Defects, disc upside-down, severe vibration
19	ELECTRIC	Improper T.BAL adjustment	Value of T.BAL adjustment is out of parameter.
30	ELECTRIC	Search time out	Failed to reach target address →Carriage / tracking defective and/or defects
A0	SYSTEM	Power failure	Power overvoltage or short circuit detected →Switching transistor defective and/or power abnormal

(4) Number of error codes

One hundred error codes (00 to 99) will be available.

(5) Remarks

Error codes are not displayed for the mechanism alone (because CD is OFF when an mechanical error is generated).

When the system cannot read TOC, it is not deemed as an error, and the system continues operation to a certain extent.

Be sure to take measures as shown in the display examples whenever designing a new head unit.

The first digit of an error code has a meaning as follows:

1X : Error related to setup

3X : Error related to the search function

AX : Other errors

● New Test Mode

When S-CD is specified as the source, basically the system plays as normal operation. After setup, the system displays the cause and time (absolute time) of an error if focus search is improper, spindle lock is removed, subcode cannot be read, or sound is skipped. During setup, the system displays the operation status of CD control software (internal RAM : CPOINT). The purpose of these displays and functions are to detect aging of servicing, as well as to improve efficiency of defect analysis.

(1) How to enter NEW TEST Mode

1. Reset the system by pressing keys (depending on the product) to enter the conventional Test mode.
2. Select S-CD as the source by pressing the source or CD key, then inserting a disc. Confirm that the regulator is OFF. Press the Switch Jump Mode key.
3. After that, the system will stay in the new Test mode, regardless of whether S-CD is OFF or ON.

To exit from the new Test mode, reset the system.

See the test mode flow chart Page 70.

(2) Relations of keys

keys	Test Mode		New Test Mode	
	Regulator OFF	Regulator ON	PLAY in progress	Error Protection
BAND	To Regulator ON	To Regulator OFF	—	Time / Err No.select
→	—	FWD-Kick	FF / TR+	—
←	—	REV-Kick	REV / TR-	—
1	—	Tracking Close	Scan	—
2	—	Tracking Open	RPT	—
3	—	Focus Close	RDM	—
—	—	Focus Open	—	—
—	—	Jump Off	—	—
6	To New Test Mode	Jump Mode select	Auto / Manu	T.No. / Time select

Operations, such as EJECT, CD ON/OFF are performed normal mode.

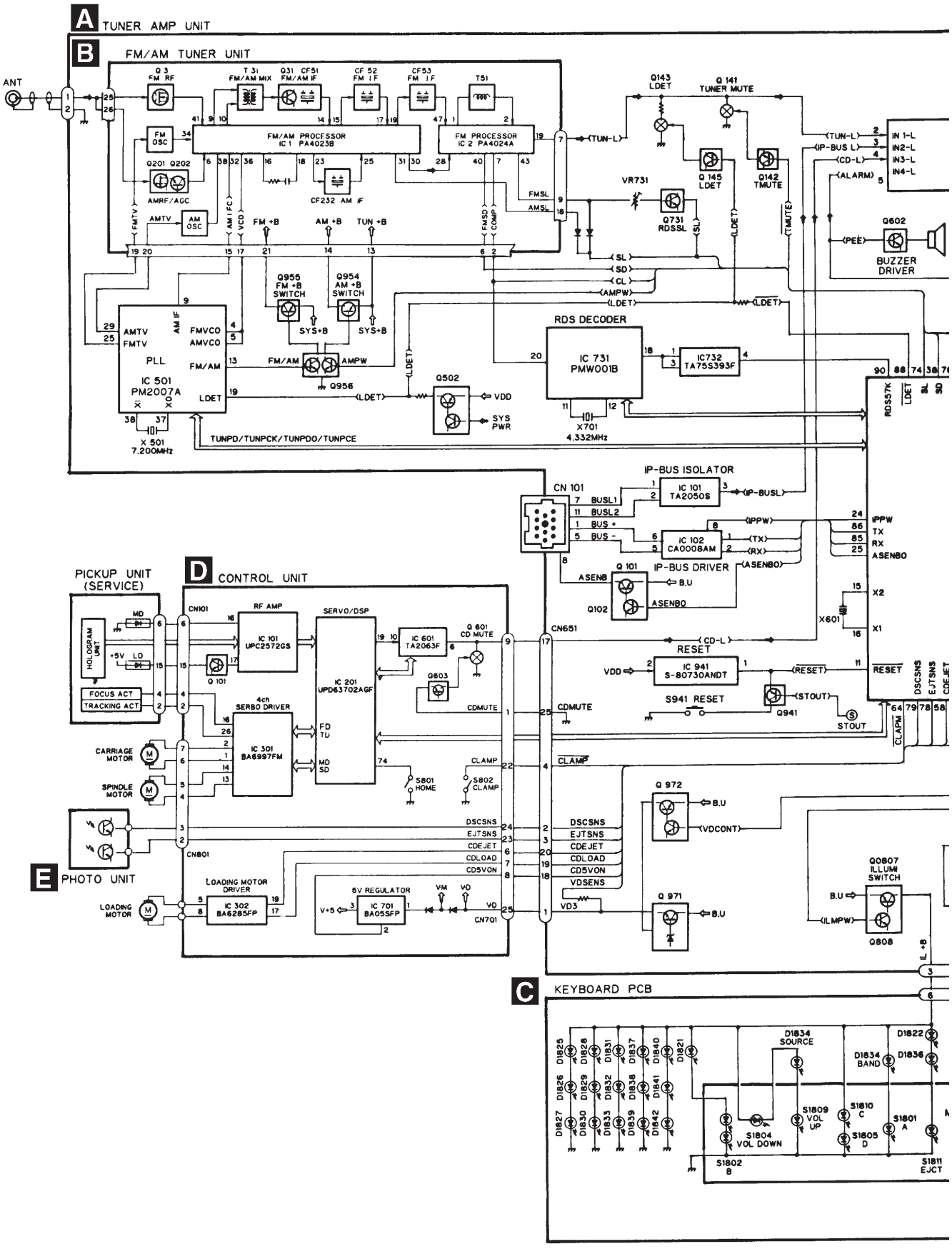
(3) Error Cause, Error Code

Code	Classification	Description	Cause / Details
40	ELECTRIC	Put out of focus	FOK=Low has continued for 100 msec →Damaged or soiled disc. vibration, or detective servo
41	ELECTRIC	Spindle unlock	LOCK=has continued for 100 msec →Damaged or soiled disc. vibration, or detective servo
42	ELECTRIC	Failed to read subcode	The system could not read subcode for 100 msec →Damaged or soiled disc. vibration, or detective servo
43	ELECTRIC	Sound skipped	The last-address-memory function activated →Damaged or soiled disc. vibration, or detective servo

There will be no mechanical error during aging. Error codes should be displayed in the same manner as in Normal mode.

7.3 BLOCK DIAGRAM

● **DEH-P645R/EW**



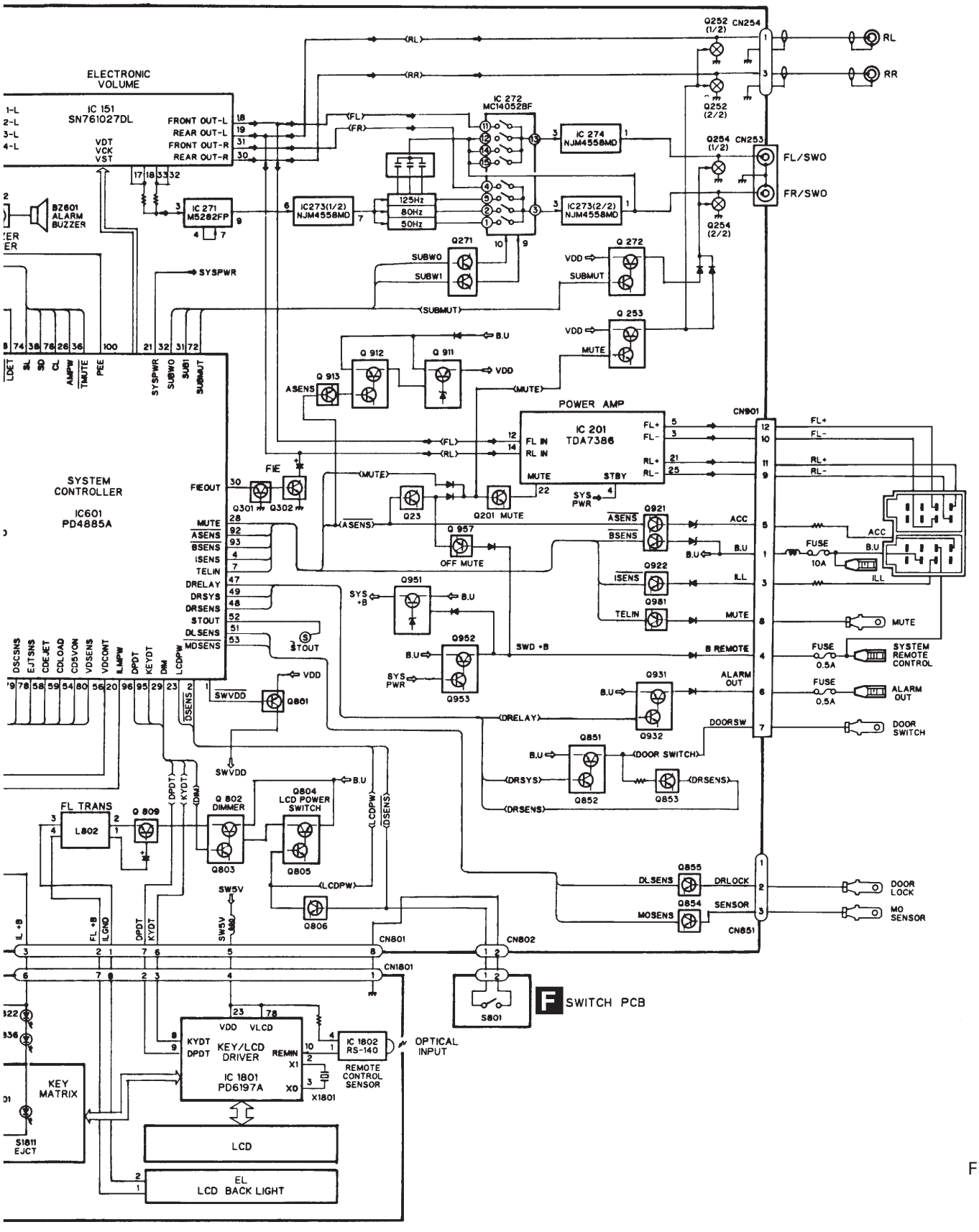

ELECTRONIC VOLUME
IC 151 SN761027DL
FRONT OUT-L
REAR OUT-L
FRONT OUT-R
REAR OUT-R
VDT
VCK
VST
BZ601 ALARM BUZZER
IC 271 M5282FP
IC273(1/2) NJM4558MD
IC273(2/2) NJM4558MD
IC 272 MC14052BF
IC 274 NJM4558MD
125Hz
80Hz
50Hz
Q271
Q 272
Q 253
Q 912
Q 911
Q 913
SUBW0
SUBW1
SUBMUT
MUTE
VDD
B.U
SYSPWR
ASENS
(MUTE)
POWER AMP
IC 201 TDA7386
FL IN
RL IN
STBY
SYS PWR
Q201 MUTE
Q23
Q 957
OFF MUTE
FIE
FIEOUT
Q301
Q302
SYSTEM CONTROLLER
IC601 PD4885A
MUTE
ASENS
BSENS
ISENS
TELIN
DRELAY
DRSYS
DRSENS
STOUT
DLSENS
MDSENS
Q951
Q952
Q953
SYS +B
SWD +B
Q801
SWVDD
Q921
Q922
Q981
Q931
Q932
Q851
Q852
Q853
ACC
ILL
B REMOTE
ALARM OUT
DOORSW
DOOR SWITCH
(DRELAY)
(DRSYS)
(DRSENS)
FL TRANS
L802
Q 809
Q 802 DIMMER
Q803
Q804 LCD POWER SWITCH
Q805
Q806
(LCDPW)
(DSENS)
(DPDT)
(KYDT)
(DIM)
SW5V
CN901
CN801
CN802
CN1801
CN851
FL+
FL-
RL+
RL-
FUSE
10A
0.5A
SYSTEM REMOTE CONTROL
ALARM OUT
DOOR SWITCH
DOOR LOCK
MO SENSOR
Q855
Q854
DLSENS
MOSENS
DRLOCK
SENSOR
S801
F SWITCH PCB
OPTICAL INPUT
IC 1802 RS-140
REMOTE CONTROL SENSOR
KEY/LCD DRIVER
IC 1801 PD6197A
REMIN
X1
X0
X1801
KEY MATRIX
S1811 EJCT
LCD
EL
LCD BACK LIGHT
Q252 CN254 (1/2)
Q252 (2/2)
Q254 CN253 (1/2)
Q254 (2/2)
RL
RR
FL/SWO
FR/SWO

Fig. 27

8. OPERATIONS AND SPECIFICATIONS

8.1 OPERATIONS

● **Connection Diagram**

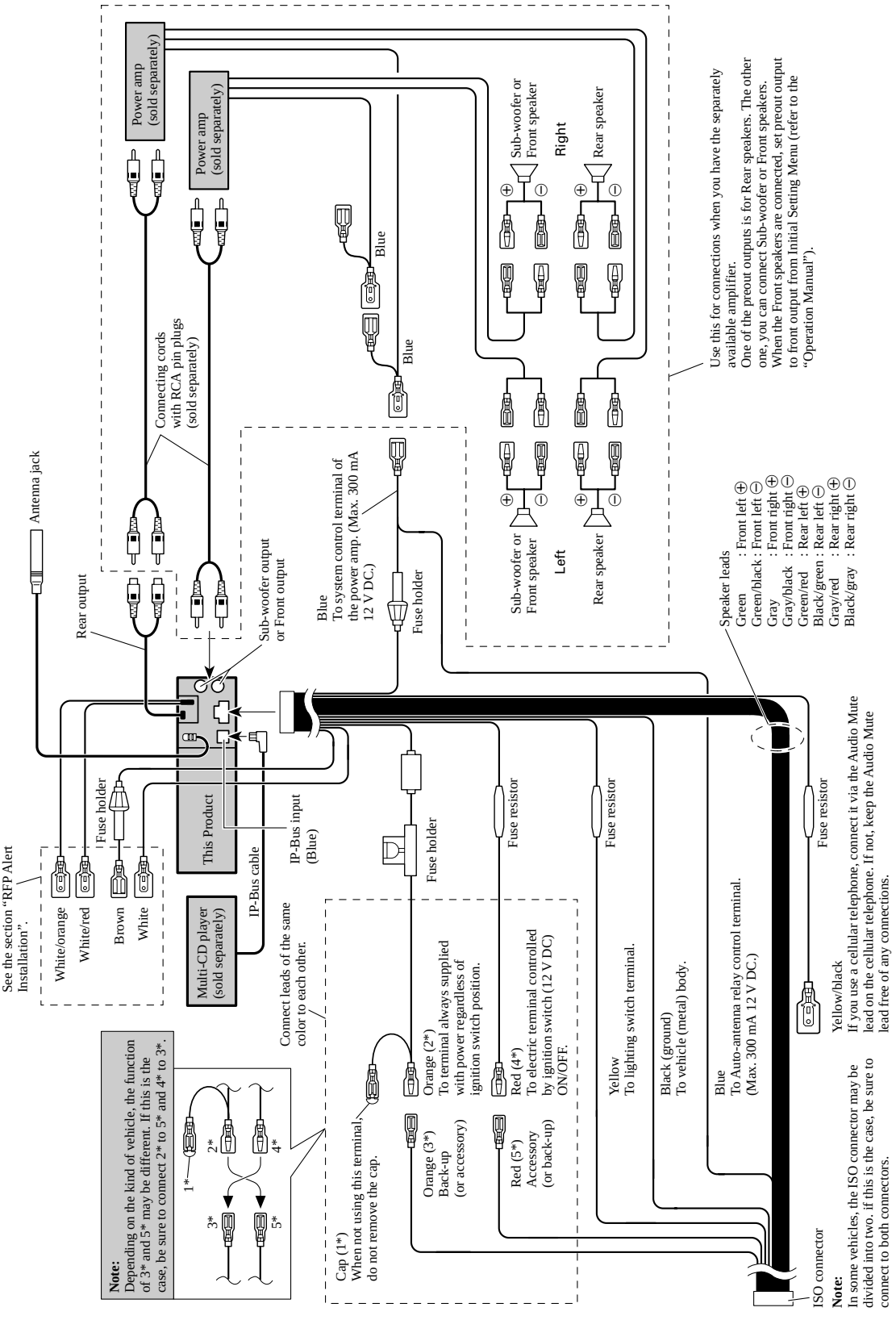

Power amp (sold separately)
Power amp (sold separately)
Connecting cords with RCA pin plugs (sold separately)
Blue
Blue
Blue
To system control terminal of the power amp. (Max. 300 mA 12 V DC.)
Fuse holder
Sub-woofer or Front speaker
Right
Rear speaker
Sub-woofer or Front speaker
Left
Rear speaker
Use this for connections when you have the separately available amplifier.
One of the preout outputs is for Rear speakers. The other one, you can connect Sub-woofer or Front speakers.
When the Front speakers are connected, set preout output to front output from Initial Setting Menu (refer to the "Operation Manual").
Speaker leads
Green : Front left ⊕
Green/black : Front left ⊖
Gray : Front right ⊕
Gray/black : Front right ⊖
Green/red : Rear left ⊕
Black/green : Rear left ⊖
Gray/red : Rear right ⊕
Black/gray : Rear right ⊖
Antenna jack
Rear output
Sub-woofer output or Front output
See the section "RFP Alert Installation".
White/orange
White/red
Brown
White
Fuse holder
This Product
IP-Bus cable
IP-Bus input (Blue)
Multi-CD player (sold separately)
Connect leads of the same color to each other.
Fuse holder
Fuse resistor
Fuse resistor
Fuse resistor
Note:
Depending on the kind of vehicle, the function of 3* and 5* may be different. If this is the case, be sure to connect 2* to 5* and 4* to 3*.
1*
2*
4*
3*
5*
Cap (1*)
When not using this terminal, do not remove the cap.
Orange (2*)
To terminal always supplied with power regardless of ignition switch position.
Red (4*)
To electric terminal controlled by ignition switch (12 V DC) ON/OFF.
Yellow
To lighting switch terminal.
Black (ground)
To vehicle (metal) body.
Blue
To Auto-antenna relay control terminal. (Max. 300 mA 12 V DC.)
Orange (3*)
Back-up (or accessory)
Red (5*)
Accessory (or back-up)
Yellow/black
If you use a cellular telephone, connect it via the Audio Mute lead on the cellular telephone. If not, keep the Audio Mute lead free of any connections.
ISO connector
Note:
In some vehicles, the ISO connector may be divided into two. if this is the case, be sure to connect to both connectors.

Fig. 28

⚠ CAUTION

- Because of the complexity of today's technically advanced vehicle wiring systems, we recommend that your RFP Alert be installed ONLY by a professional Pioneer installer.

Affix the included deterrent stickers to the inside of the front door windows.

Description

■ **White (DOOR SWITCH) ..... (Fig. 29, 30)**
This lead is used to trigger RFP Alert when any door is opened and may be connected to either positive or negative (+/–) type door pin switches.

■ **Brown (ALARM OUTPUT) ..... (Fig. 31)**
This lead is a selectable constant or pulsed positive (+) output capable of driving up to 2 relays (500 mA) max. Use this lead to trigger relays for siren, horn, honk or flashing lights.

■ **White/Red (ALARM SENSOR) ..... (Fig. 32)**
This lead is a negative (–) input and is provided for hookup of negative triggering sensors such as shock, or glass sensors (sold separately).

■ **White/Orange (DOOR LOCK) ..... (Fig. 33)**
This lead is used to disarm RFP Alert from power door lock systems or alert systems with remote unlock. This lead may be connected to door lock systems with either positive or negative (+/–) unlock triggers.

Door Switches

The RFP Alert's door trigger input is designed to work with either positive or negative door pin switches. After hookup, simply set door system type from RFP Alert Setting Menu.
Domelight Delay-RFP Alert will wait for last door to close and courtesy light to turn off before Exit Delay Timer Starts.

DOOR SWITCH (White)

Grounding Type Switch:

Most European, Japanese, GM and Chrysler vehicles.

Note:
- Set RFP Alert to recognize ground trigger from RFP Alert Setting Menu. Set Door System to "DOOR-L :CLS".

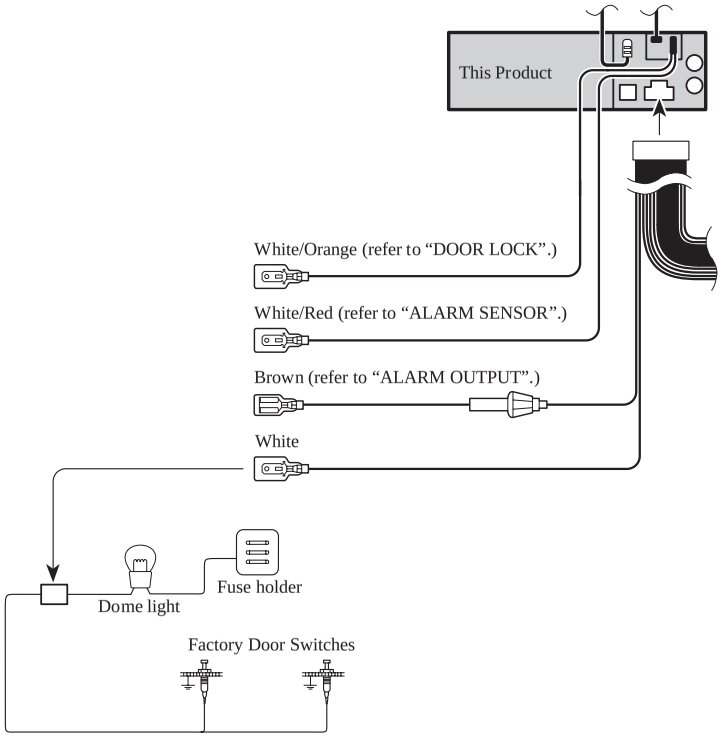


Fig. 29

RFP Alert Installation

Positive (Non-grounding) Type Switch:

Jaguar, Mercedes, Ford

Note:

- Set RFP Alert to recognize positive trigger from RFP Alert Setting Menu. Set Door System to "DOOR-H :CLS".

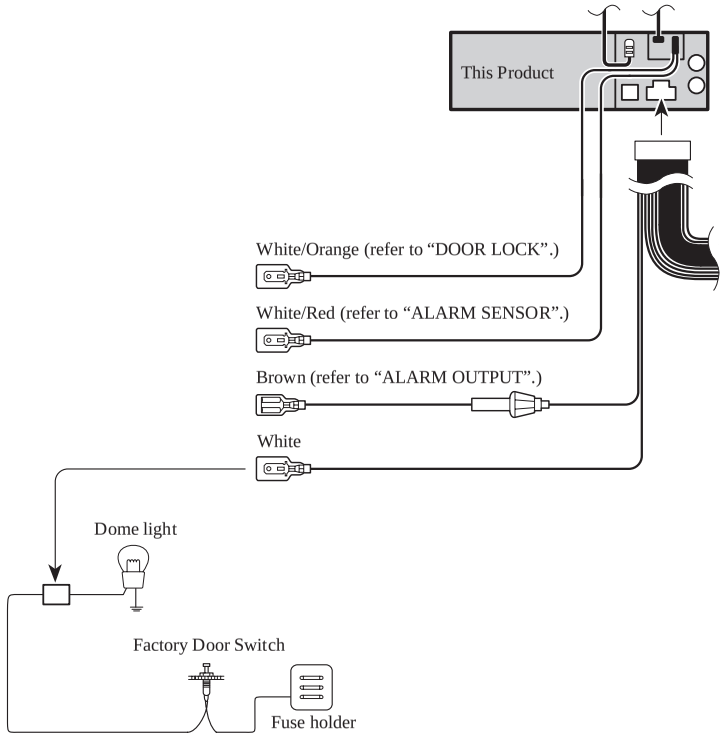


Fig. 30

Installing New Pin Switches

Separately sold pin switches are available that can be used to protect your vehicle's trunk, hood etc. When you purchase these, make sure that you first confirm that they can be used with your vehicle's door system type.
Follow the makers instructions as to installation and wiring.

ALARM OUTPUT (Brown)

The brown lead provides a +12 V, constant or pulsed output while alert is sounding. This lead has a maximum current capability of 500 mA and can be used to trigger a relay to sound a siren, horn or flash lights.

Recommended Wiring:

30 amp relay (sold separately) required to operate siren, horn or lights.

- Connect Brown wire to one side of relay coil.
- Connect ground to other side of coil.

For sirens, horns or lights requiring +12 V trigger

- Connect normally open to fused, constant +12 V source.

For horns or lights requiring ground trigger

- Connect normally open pin to ground.

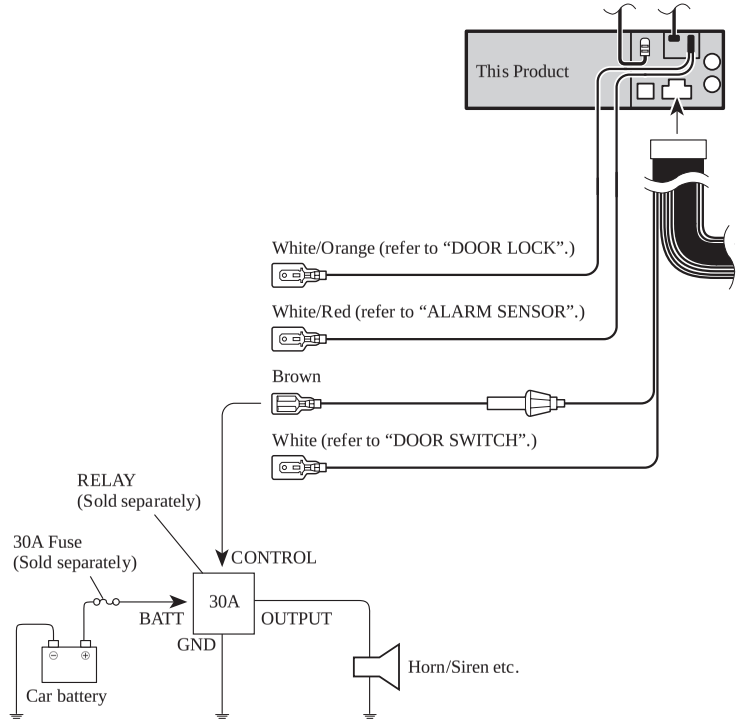


Fig. 31

ALARM SENSOR (White/Red)

The white/red lead is a negative triggered (Grounding) input that can be connected to various separately sold shock or glass sensors. There is no limit as to how many sensors are connected, so you can ensure total protection of your vehicle. Follow the makers instructions as to installation and wiring.

Note:

- If the shock sensor detects vehicle vibrations, use the negative (–) output type. If you use the positive (+) output type, the alert will sound continually, and the shock sensor will not operate correctly.

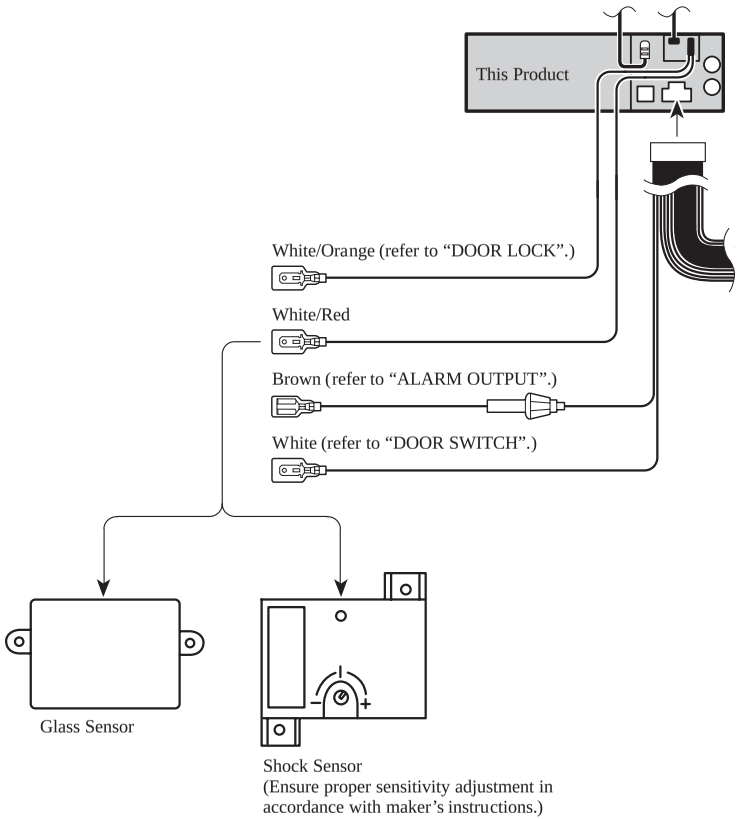


Fig. 32

- To ensure full proper operation of RFP Alert, Pioneer suggests using only White/Red wire, electronic sensors capable of providing a pulse width greater than 64 ms.

DOOR LOCK (White/Orange)

The white/orange lead should be connected to the “unlock” lead for your vehicles door locking system, so that when you open the driver’s door by your vehicle’s remote control, your Pioneer RFP Alert is deactivated.

First, locate the two wires from the lock/unlock switch that operate the factory door lock solenoids for the driver’s side. Using a meter, determine which lead is used to unlock the door; connect this to the white/orange lead of your Pioneer Car Stereo. In the RFP Alert Setting Menu, select the door-lock system type according to your vehicle (grounding or non-grounding).

If you have difficulty wiring this connection, please consult your nearest Installation specialist.

Note:

- If your vehicle is equipped with a central door lock but the glass or shock sensor is not connected, if the window is broken and the central door lock is released, this unit’s RFP Alert will not operate.
- Pioneer recommends that both a shock sensor and glass sensor be installed when you are using the “Remote Disarming” feature.

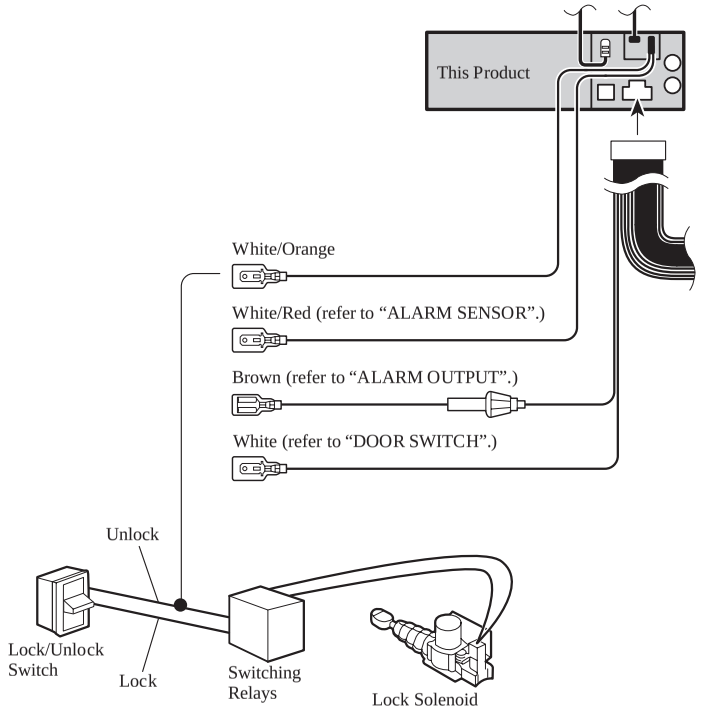
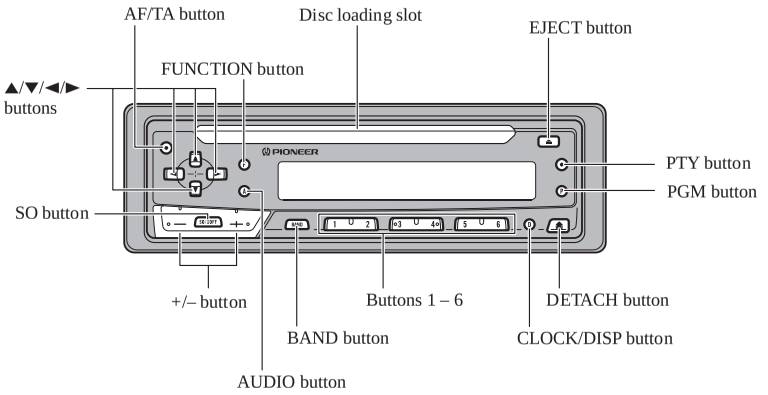


Fig. 33

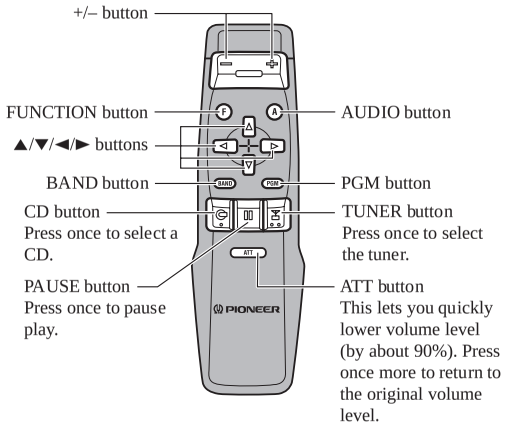
Key Finder

Head Unit



Remote Controller

A remote controller that enables remote operation of the head unit is supplied. Operation is the same as when using buttons on the head unit.


+/– button
FUNCTION button
AUDIO button
▲/▼/◄/► buttons
BAND button
PGM button
CD button
Press once to select a CD.
TUNER button
Press once to select the tuner.
PAUSE button
Press once to pause play.
ATT button
This lets you quickly lower volume level (by about 90%). Press once more to return to the original volume level.

Remote Controller and Care

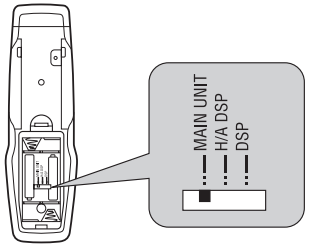
Using the Remote Controller

This product is equipped with a remote controller for convenient operation.

- Point the controller in the direction of the front panel to operate.
- When the controller is not in use, attach it firmly to the provided mounting base.

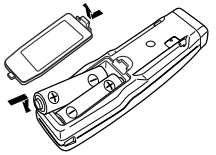
Precaution:

- Do not store the remote controller in high temperatures or direct sunlight.
- The controller may not function properly in direct sunlight.
- Do not let the remote controller fall onto the floor, where it may become jammed under the brake or accelerator pedal.
- Open the cover on the rear of the remote control, and you'll find a switch. Do not change this switch's position from the MAIN UNIT position. (Initially, the switch is set to the MAIN UNIT position.) If you change the switch setting, correct operation of this product will not be possible.



Batteries

- **Remove the cover on the back of the remote controller and insert the batteries with the (+) and (–) poles pointing in the proper direction.**



Precaution:

- Use only AAA or IEC R03 1.5 V batteries.
- Remove the batteries if the remote controller is not used for a month or longer.
- Do not attempt to recharge the supplied batteries.
- Do not mix new and used batteries.
- If the event of battery leakage, wipe the remote controller completely clean and install new batteries.

Basic Operation of Tuner

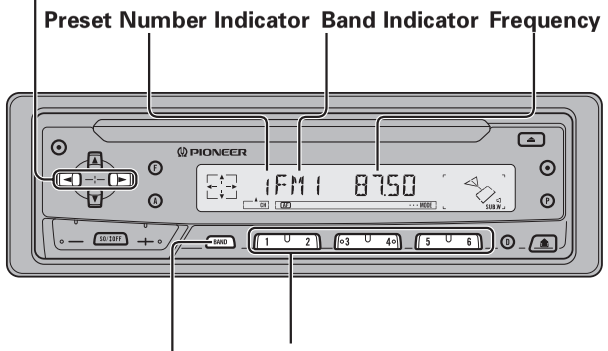
This product's AF function can be switched ON and OFF. AF should be switched OFF for normal tuning operations.

Manual and Seek Tuning

- **You can select the tuning method by changing the length of time you press the ◄/► button.**

Manual Tuning (step by step)	0.3 seconds or less
Seek Tuning (automatically)	0.3 – 2 seconds
Manual Tuning (continuously)	2 seconds or more

Note:
- "◯" stereo indicator lights when a stereo station is selected.



- **You can memorize broadcast stations in buttons 1 through 6 for easy, one-touch station recall.**

Preset station recall	2 seconds or less
Broadcast station preset memory	2 seconds or more

Note:
- Up to 18 FM stations (6 in FM1, FM2 and FM3) and 6 MW/LW stations can be stored in memory.
- You can also use the ▲ or ▼ buttons to recall broadcast stations memorized in buttons 1 through 6.

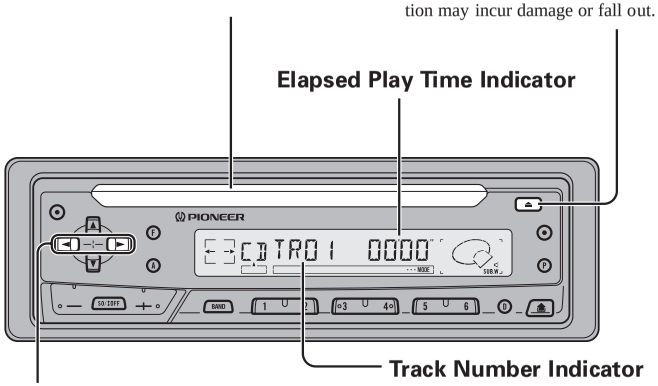
Basic Operation of Built-in CD Player

Disc Loading Slot

The built-in CD player plays one standard 12 cm or 8 cm (single) CD at a time. Do not use an adapter when playing 8 cm CD.

Eject

Note:
- The CD function can be turned ON/OFF with the disc remaining in this product. (See page 7.)
- Discs left partially inserted after ejection may incur damage or fall out.



Track Search and Fast Forward/Reverse

- **You can select between Track Search or Fast forward/Reverse by pressing the ◄/► button for a different length of time.**

Track Search	0.5 seconds or less
Fast forward/Reverse	Continue pressing

Note:
- If a disc cannot be inserted fully or playback fails, make sure the recorded side is down. Push the EJECT button and check the disc for damage before reinserting it.
- If a CD is inserted with the recorded side up, it will be ejected automatically after a few moments.
- If the built-in CD player cannot operate properly, an error message (such as "ERROR-14") appears on the display. Refer to "Built-in CD Player's Error Message" on page 57.

Basic Operation of Multi-CD Player

This product can control one or more multi-CD players. (There are some types of Multi-CD players such as CDX-P630S which you cannot connect more than one.)

Switching the Multi-CD Player

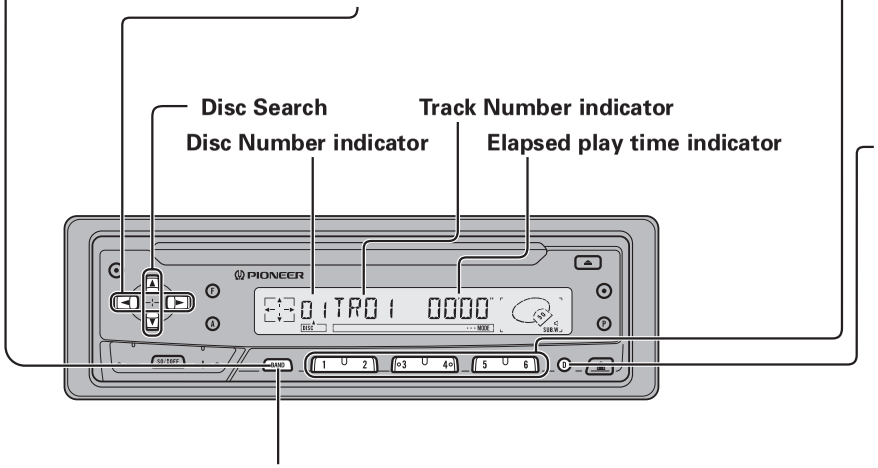
Using a multiple connection adapter lets you connect up to three Multi-CD players.

M-CD 1 → M-CD 2→ M-CD 3
(Displayed for about 2 seconds.)

Track Search and Fast forward/Reverse

- **You can select between Track Search or Fast forward/Reverse by pressing the ◄/► button for a different length of time.**

Track Search	0.5 seconds or less
Fast forward/Reverse	Continue pressing



Ejecting a Single Disc (for 50-Disc type only)

- **Press the BAND button for 2 seconds or more, and you can eject the currently playing disc from the extra tray.**

  (Refer to the operation manual for the 50-Disc type Multi-CD player for details concerning disc ejection from the extra tray.)

Note:
- This function does not operate if a disc is already loaded in the extra tray.

Disc Number Search (for 6-Disc, 12-Disc types)

- **You can select discs directly with the 1 to 6 buttons. Just press the number corresponding to the disc you want to listen to.**

Note:
- When a 12-Disc Multi-CD Player is connected and you want to select disc 7 to 12, press the 1 to 6 buttons for 2 seconds or longer.

Disc Number Rough Search (for 50-Disc type only)

This handy function lets you select discs loaded in a 50-Disc Multi-CD Player using the 1 to 5 buttons. The 50 discs are divided into five blocks, with each of the 1 to 5 buttons assigned to a block.

- **Select the desired block with the 1 to 5 buttons.**

Note:
- After completing a rough search, use the ▲ and ▼ buttons to select a desired disc.

Switching Between Displays

- **Each time you press the CLOCK/DISP button, the display switches between Disc Title and Group indications for the disc currently playing.**

  Playback mode (Elapsed play time) → Disc Title → Music Group

Note:
- Music Group display is a 50-Disc type Multi-CD player function. You cannot switch to this display with 6-Disc and 12-Disc type Multi-CD players.
- If you switch displays when disc titles have not been input or when discs have not been allocated to a music group, “NO TITLE” or “NO GROUP” is displayed for about 8 seconds.

Note:
- The multi-CD player may perform a preparatory operation, such as verifying the presence of a disc or reading disc information, when the power is turned ON or a new disc is selected for playback. “READY” is displayed.
- When a magazine is loaded into a 50-Disc type Multi-CD Player, information on all the discs in the magazine is read.
  If you start playing a disc on a 50-Disc type Multi-CD Player before reading of information on all discs has been completed, reading of information stops part way through. This will prevent you from using a number of functions. (If you try and use these functions, “NOT READY” is displayed.)
  If this happens, reading of information begins again when you switch to a component other than the 50-Disc type Multi-CD Player.
- If the multi-CD player cannot operate properly, an error message such as “ERROR-14” is displayed. Refer to the multi-CD player owner’s manual.
- If there are no discs in the multi-CD player magazine, “NO DISC” is displayed.
- “LOAD” will be displayed in the following cases:
  * If the disc in the extra tray in selected.
  * If the disc in moved from the extra tray to the magazine.
    (Refer to the 50-Disc type multi-CD player owner’s manual.)

Tuner Operation

Local Seek Tuning (LOCAL)

When Local mode is ON, you can only select broadcast stations providing strong reception.

1. **Press the FUNCTION button and select the Local mode (LOCAL) in the Function Menu.**

2. **Switch the Local ON/OFF with the ▲ / ▼ buttons.**

"LOC"

3. **Select the desired Local Seek sensitivity with the ◄/► buttons.**

FM : LOCAL 1 ↔ LOCAL 2 ↔ LOCAL 3 ↔ LOCAL 4
MW/LW : LOCAL 1 ↔ LOCAL 2

Note:
- The LOCAL 4 setting allows reception of only the strongest stations, while lower settings let you receive progressively weaker stations.

Best Stations Memory (BSM)

The BSM (Best Stations Memory) function stores stations in memory automatically.

1. **Press the FUNCTION button and select the BSM mode (BSM) in the Function Menu.**

2. **Switch the BSM ON with the ▲ button.**

   The stations with the strongest signals will be stored under buttons 1–6 and in order of their signal.

- **To cancel the process, press the ▼ button in the Function Menu before memorization is complete.**

Using RDS Functions

What is RDS?

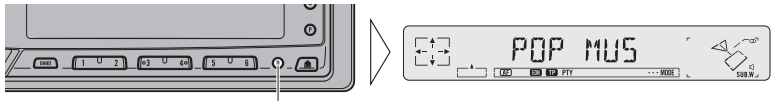
RDS (Radio Data System) is a system for transmitting data along with FM programs. This data, which is inaudible, provides a variety of features such as: program service name, program type display, traffic announcement standby, automatic tuning and program type tuning, intended to aid radio listeners in tuning to a desired station.

Note:
- RDS service may not be provided by all stations.
- RDS functions, like AF (Alternative frequencies search) and TA (Traffic Announcement standby), are only active when your radio is tuned to RDS stations.

Program Service Name Display

With this function, the names of networks/stations providing RDS services replace the frequency on the display a few seconds after they are tuned in.

- **When you want to know PTY Information or the frequency of the current station, change the display.**



Each press changes the Display ...

Each press of the CLOCK/DISP button selects the display in the following order:
Program Service Name → PTY Information → Frequency

Note:
- After switching displays, if you do not perform an operation within 8 seconds, the Program Service Name is automatically displayed.

■ PTY Information

PTY (Program Type ID code) information for the currently tuned station appears on the display for 8 seconds. The information is correlated with the list in the section “PTY Function” on page 24.

■ Frequency

The frequency of the current station appears on the display.

AF Function (AF)

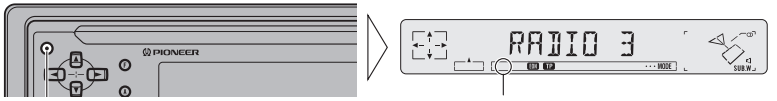
The AF (Alternative Frequencies search) function is used to search for other frequencies in the same network as the currently tuned station. It automatically retunes the receiver to another frequency in the network which is broadcasting a stronger signal when there are problems with reception of the currently tuned station or better reception is possible on a different frequency.

Note:
- AF tunes the receiver only to RDS stations when you use Seek tuning or BSM Auto Memory with the “AF” indicator ON.
- When you recall a preset station, the tuner may update the preset station with a new frequency from the station’s AF list. (This is only available when using presets on the FM1 band.) No preset number appears on the display if the RDS data for the station received differs from that for the originally stored station.
- Sound may be temporarily interrupted by another program during an AF frequency search.
- When the tuner is tuned to a non-RDS station, the “AF” indicator flashes.
- AF can be switched ON or OFF independently for each FM band.

Activating/Deactivating the AF Function

AF is set to ON by default.

- **Turn AF to OFF.**



Hold for 2 seconds

“AF” disappears

To turn AF back ON, repeat the preceding operation.

Note:
- You can also switch the AF Function ON/OFF in the Function Menu.

PI Seek Function

The tuner searches for another frequency broadcasting the same programming. “PI SEEK” appears on the display and the radio volume is muted during a PI Seek. The muting is discontinued after completion of the PI Seek, whether or not the PI seek has succeeded. If the PI Seek is unsuccessful, the tuner returns to the previous frequency.

PI Seek

If the tuner fails to locate a suitable alternative frequency or if the broadcasting signal is too weak for proper reception, the PI Seek will automatically start.

Auto PI Seek (for preset station)

When preset stations cannot be recalled, as when traveling long distances, the product can be set to perform PI Seek also during preset recall.
The default setting for Auto PI Seek is OFF.

Note:
- Refer to “Initial Setting Menu” for details on how to switch Auto PI Seek ON/OFF.

Regional Function (REG)

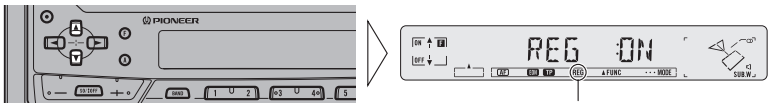
When AF is used to retune the tuner automatically, REG (regional) limits the selection to stations broadcasting regional programs.

Note:
- Regional programming and regional networks are organized differently depending on the country (i.e., they may change according to the hour, state or broadcast area).
- The preset number may disappear on the display if the tuner tunes in a regional station which differs from the originally set station.

Activating REG

The REG function can be turned ON independently for each FM band.

1. **Press the FUNCTION button and select the REG mode (REG) in the Function Menu.**
2. **Activate or deactivate REG while in an FM band.**



“REG”

To cancel the Function Menu, press the BAND button.

TA Function (TA)

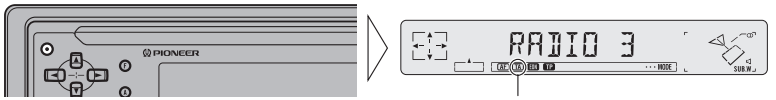
The TA (Traffic Announcement standby) function lets you receive traffic announcements automatically, no matter what source (tuner, built-in CD player or multi-CD player) you are listening to. The TA function can be activated for either a TP station (a station that broadcasts traffic information) or an EON TP station (a station carrying information which cross-references TP stations).

Activating/Deactivating the TA Function

1. **Tune in a TP or EON TP station.**

   The “TP” indicator lights when the tuner is tuned to a TP station, and both the “EON” and “TP” indicators light when it is tuned to an EON TP station.

2. **Activate the TA function.**



“TA”

The “TA” indicator lights, indicating that the tuner is waiting for traffic announcements.

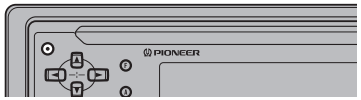
Repeat the preceding operation when no traffic announcement is being received to deactivate the TA function.

Note:
- You can also switch the TA Function ON/OFF in the Function Menu.
- Only the (+), (–), AF/TA, AUDIO, CLOCK/DISP and SO buttons can be used during traffic announcement reception.
- The system switches back to the original source following traffic announcement reception.
- The TA function can be activated from the built-in CD player or multi-CD player mode if the tuner was last set to the FM band but not if it was last set to the MW/LW band.
- If the tuner was last set to FM, turning on the TA function lets you operate other tuning functions while listening to a CD.
- Only TP or EON-TP stations are tuned in during the Seek Tuning mode when the “TA” indicator is ON.
- Only TP or EON-TP stations are stored by BSM when the “TA” indicator is ON.

Using RDS Functions

Canceling Traffic Announcements

- **Press the AF/TA button while a traffic announcement is being received to cancel the announcement and return to the original source.**

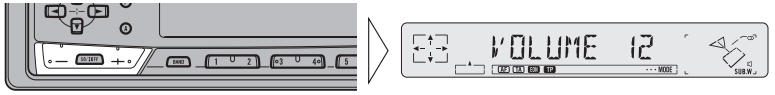


The announcement is canceled but the tuner remains in the TA mode until the AF/TA button is pressed again.

Adjusting the TA Volume

When a traffic announcement begins, the volume adjusts automatically to a preset level to enable you to hear the announcement clearly.

- **Set the volume by adjusting it during reception of a traffic announcement.**



The newly set volume is stored in memory and recalled for subsequent traffic announcements.

TP Alarm function

About 30 seconds after the “TP” or “EON” indicator is extinguished due to a weak signal, a 5 second beep sounds to remind you to select another TP or EON-TP station.

- **If you are listening to the tuner, tune in another TP station or EON-TP station.**

In the built-in CD player or multi-CD player mode, the tuner automatically seeks out the TP station with the strongest signal in the current area 10 (or 30)* seconds after “TP” disappears from the display.

*** Time taken before Seek begins.**

TA function ON	10 seconds
TA, AF functions ON	30 seconds

PTY Function

The PTY function enables you to select stations by the type of programming they broadcast (PTY Search). It also provides automatic tuning to emergency broadcasts (PTY Alarm).

Note:

- PTY code program types are as follows:

1. NEWS:	News.
2. AFFAIRS:	Current affairs.
3. INFO:	General information and advice.
4. SPORT:	Sports programs.
5. EDUCATE:	Educational programs.
6. DRAMA:	All radio plays and serials.
7. CULTURE:	Programs concerned with any aspect of national or regional culture.
8. SCIENCE:	Programs about nature, science and technology.
9. VARIED:	Light entertainment programs.
10. POP MUS:	Popular music.
11. ROCK MUS:	Contemporary modern music.
12. EASY MUS:	Easy listening music.
13. L. CLASS:	Light classical music.
14. CLASSICS:	Serious classical music.
15. OTH MUS:	Other types of music, which can’t be categorized.
16. WEATHER:	Weather reports/Meteorological information.
17. FINANCE:	Stock market reports, commerce, trading etc.
18. CHILDREN:	Children’s programs.
19. SOCIAL:	Social affairs programs.
20. RELIGION:	Religion affairs programs or services.
21. PHONE IN:	Phone in based programs.
22. TOURING:	Travel programs, not for announcements about traffic problem.
23. LEISURE:	Programs about hobbies and recreational activities.
24. JAZZ:	Jazz music based programs.
25. COUNTRY:	Country music based programs.
26. NAT MUS:	National music based programs.
27. OLDIES:	Oldies music, ‘Golden age’ based programs.
28. FOLK MUS:	Folk music based programs.
29. DOCUMENT:	Documentary programs.

- If a PTY code of zero is received from a station, “NONE” will be displayed. This indicates that the station has not defined its program contents.
- If the signal is too weak for this product to pick up the PTY code, “NO PTY” will be displayed.

Repeat Play (REPEAT)

Repeat Play plays the same track repeatedly.

1. **Press the FUNCTION button and select the Repeat mode (REPEAT) in the Function Menu.**
2. **Switch Repeat Play ON/OFF with the ▲/▼buttons.**

Note:
- If you perform Track Search or Fast forward/Reverse, Repeat Play is automatically canceled.

Random Play (RANDOM)

Random Play plays the tracks on a CD in random order for variety.

1. **Press the FUNCTION button and select the Random mode (RANDOM) in the Function Menu.**
2. **Switch Random Play ON/OFF with the ▲/▼buttons.**

Scan Play (T-SCAN)

Scan Play plays the first 10 seconds or so of each track on a CD in succession.

1. **Press the FUNCTION button and select the Scan mode (T-SCAN) in the Function Menu.**
2. **Switch the Scan Play ON with the ▲button.**

3. **When you find the desired track, cancel scan play with the ▼button.**

   If the Function Menu is automatically canceled at this time, select the Scan mode in the Function Menu once more.

Note:
- Scan Play is canceled automatically after all the tracks on a disc have been scanned.

Pause (PAUSE)

Let's you pause play of the track currently playing.

1. **Press the FUNCTION button and select the Pause mode (PAUSE) in the Function Menu.**
2. **Switch the Pause ON/OFF with the ▲/▼buttons.**

Note:
- One-touch operation is possible with the remote controller.

Disc Title Input (TITLE IN)

The built-in CD player's Disc Title Input function permits entry of up to 100 disc titles comprising up to 10 letters when one or more multi-CD players is installed. (Refer to "Disc Title Input" on page 36 under "Using Multi-CD Players".)

8.2 SPECIFICATIONS

General

Power source ..... 14.4 V DC (10.8 – 15.1 V allowable)
Grounding system ..... Negative type
Max. current consumption ..... 10.0 A
Dimensions
(mounting size) .... 178 (W) × 50 (H) × 150 (D) mm
(front face) ..... 188 (W) × 58 (H) × 19 (D) mm
Weight ..... 1.4 kg

Amplifier

Maximum power output ..... 40 W × 4
Continuous power output ..... 25 W × 4
(DIN45324, +B = 14.4 V)
Load impedance ..... 4 Ω (4 – 8 Ω allowable)
Preout output level/output impedance ..... 500 mV/1 kΩ
Tone controls
(Bass) ..... ±12 dB (100 Hz)
(Treble) ..... ±12 dB (10 kHz)
Loudness contour ..... +10 dB (100 Hz), +7 dB (10 kHz)
(volume: –30 dB)

CD player

System ..... Compact disc audio system
Usable discs ..... Compact disc
Signal format ..... Sampling frequency: 44.1 kHz
Number of quantization bits: 16; linear
Frequency characteristics ..... 5 – 20,000 Hz (±1 dB)
Signal-to-noise ratio ..... 94 dB (1 kHz) (IEC-A network)
Dynamic range ..... 90 dB (1 kHz)
Number of channels ..... 2 (stereo)

FM tuner

Frequency range ..... 87.5 – 108 MHz
Usable sensitivity
..... 11 dBf (1.0 µV/75 Ω, mono, S/N: 30 dB)
50 dB quieting sensitivity .... 16 dBf (1.7 µV/75 Ω, mono)
Signal-to-noise ratio ..... 70 dB (IEC-A network)
Distortion ..... 0.3% (at 65 dBf, 1 kHz, stereo)
Frequency response ..... 30 – 15,000 Hz (±3 dB)
Stereo separation ..... 40 dB (at 65 dBf, 1 kHz)

MW tuner (DEH-P645R, P545R, P544R)

Frequency range ..... 531 – 1,602 kHz
Usable sensitivity ..... 18 µV (S/N: 20 dB)
Selectivity ..... 50 dB (±9 kHz)

LW tuner (DEH-P645R, P545R, P544R)

Frequency range ..... 153 – 281 kHz
Usable sensitivity ..... 30 µV (S/N: 20 dB)
Selectivity ..... 50 dB (±9 kHz)

PIONEER®
The Art of Entertainment

Service Manual

ORDER NO.
CRT1829

CD MECHANISM MODULE

CX-597

- **This service manual describes the operation of the CD mechanism incorporated in models listed in the table below.**
- **When performing repairs use this manual together with the specific manual for model under repair.**

Model	Service Manual	CD Mechanism Module	CD Mechanism Unit
DEH-P825R/EW, DEH-P825/UC DEH-P823/ES, DEX-P99/UC	CRT1805	CXK5011	CXA8880
DEH-P725R/EW, DEH-P725R-W/EW DEH-P725/UC, DEH-P725-W/UC DEH-P723/ES, DEH-P625/UC DEX-P88/UC, DEX-P77R/EW	CRT1812	CXK5001	CXA8870
DEH-625R/EW, DEH-624R/EW DEH-525R/EW, DEH-524R/EW DEH-424R/GR, DEH-424/EW DEH-425/IT	CRT1808	CXK5001	CXA8870
DEH-59/UC, DEH-52/UC DEH-525/UC, DEH-49/UC DEH-42/UC, DEH-425/UC DEH-225/UC, DEH-523/ES DEH-323/ES, DEH-223/ES	CRT1809	CXK5001	CXA8870

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1. THE SUMMARY OF CIRCUITS

1.1 PRE-AMP SECTION (UPC2572GS: IC101)

This section processes the pickup output signals to create the signals for the servo, demodulator & control.

The pickup output signals are I-V converted by the pre-amp with built in photo-detector in the pickup, and added by the RF amp (IC101) to obtain the RF, FE, TE, TE zero cross, and other signals.

The main component is the UPC2572GS and each section is explained below. Because this system has a single power supply (+5V), the reference voltage for this IC, the PU and the servo circuit is the voltage REFO (+2.5V). The REFO signal is obtained by buffering REFOUT from the servo LSI (IC201: UPD63702GF) and is available from Pin 19 of IC101. All measurements should be done using this REFO as reference.

Note: During measurement, do not short REFO and GND.

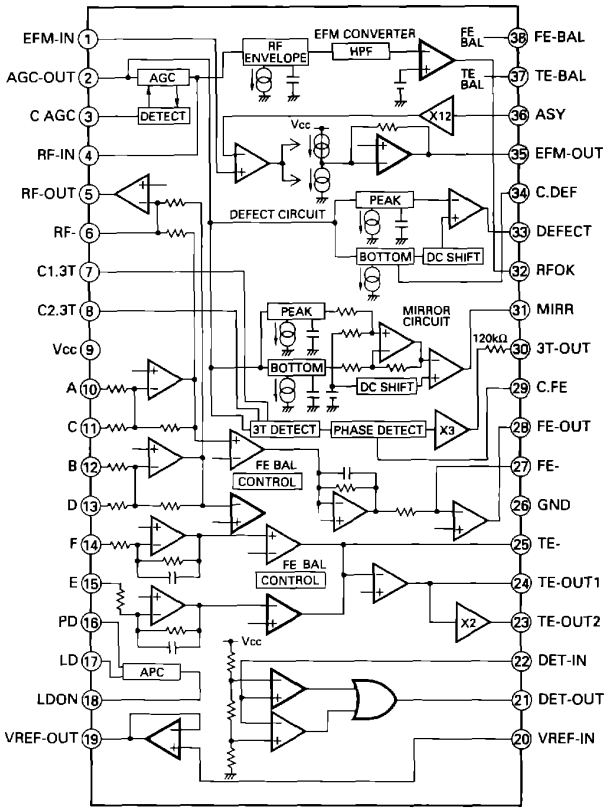


Fig.1 : UPC2572GS BLOCK DIAGRAM

1) APC Circuit (Automatic Power Control)

When the laser diode is driven with constant current, the optical output has large negative temperature characteristics. So the current must be controlled to hold the output constant with the monitor diode. The circuit that carries out this function is the APC circuit. The LD current is obtained by measuring the voltage between LD1 and ground and the value of this current is about 35mA.

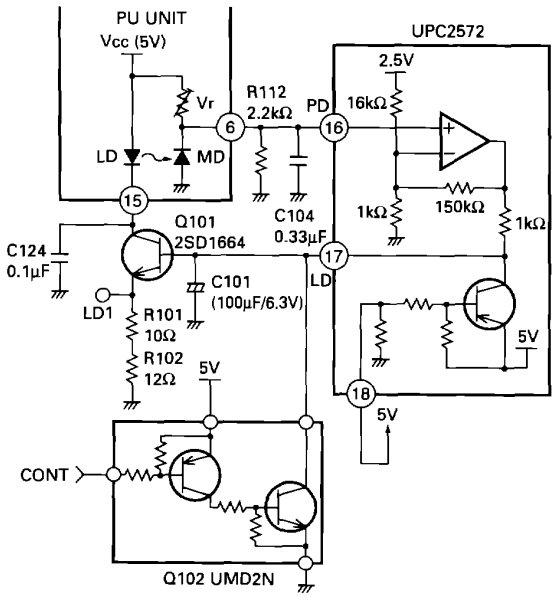


Fig.2 : APC CIRCUIT

2) RF Amp, RF AGC Amp

The photo-detector outputs (A+C) and (B+D) are added, amplified, and equalized in IC101 and output to the RFI pin. (The eye pattern can be checked at this pin.)

The RFI voltage low-frequency component is:

RFI = (A+B+C+D) × 3.22

R111 is the offset resistor for holding the RFI signal in the pre-amp's output range. The RFI signal is AC coupled and input to Pin 4 (RFIN pin).

This IC contains an RF AGC circuit, which holds the RFO output at Pin 2 at a fixed level (1.2 ± 0.2Vp-p). This RFO signal is used in the EFM, DFCT, and MIRR circuits.

3) EFM Circuit

This circuit, "squares" up the analog RF signal into a digital EFM signal. In order to ensure minimum errors it is necessary to use a feedback circuit to match the DC level of the threshold to the center of the RF waveform.

This circuit uses the fact that the EFM signal should have no DC component. By feeding back the EFM signal's DC level the threshold level changes until the DC level is zero and the threshold, by definition, is at the exact center of the RFO waveform. The filtering in the feedback has been adjusted to ensure minimum error. The EFM signal is output from Pin 35. The signal is a 2.5Vp-p amplitude signal centering on REFO.

4) DFCT (Defect) Circuit

The DFCT circuit detects defects on the disc surface, and outputs a "H" signal from Pin 33.

If there is dirt on the disc, drop outs may appear. The DFCT signal output is input to the servo LSI HOLD pin and the focus and tracking servo drives are held while the DFCT output is "H" in order to improve playability.

5) RFOK Circuit

This circuit produces the signal indicating the focus close state during play and the timing for closing the focus servo. This signal is output from Pin 32. This RFOK signal output is input to the servo LSI RFOK pin and the focus close command is issued by the servo LSI. This signal is high during play when the focus is closed.

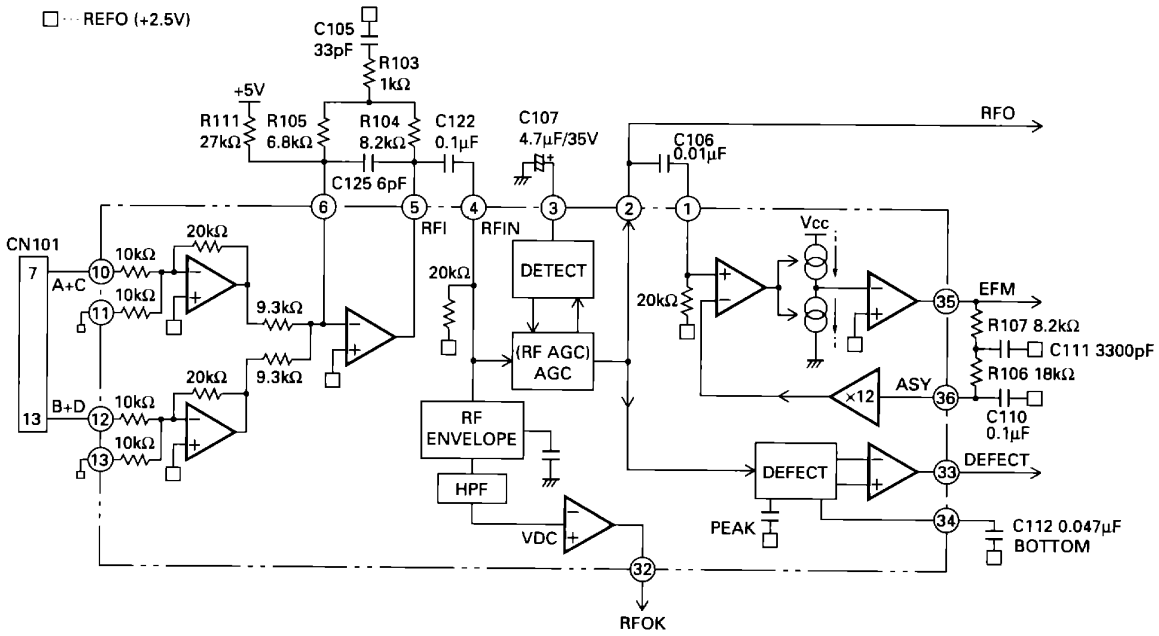


Fig.3 : RF AMP, RF AGC, EFM, DFCT, RFOK CIRCUIT

6) Focus Error Amp

The photo-detector outputs (A+C) and (B+D) are passed through a differential amp, and an error amp and (A+C-B-D) is output from Pin 28 as the FE signal.
The FEY voltage low-frequency component is:

$$FEY = (A+C-B-D) \times \frac{20k\Omega}{10k\Omega} \times \frac{90k\Omega}{68.8k\Omega} \times \frac{R108}{17.2k\Omega}$$

: (PU FE level × 5.02)

An S curve of about 1.6Vp-p is obtained with REFO as the reference. The final-stage amp cutoff frequency is 12.4kHz.

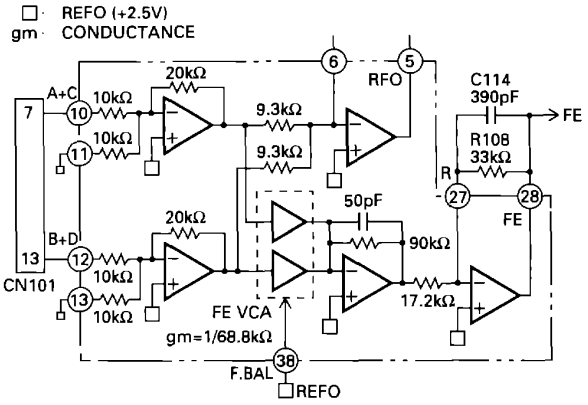


Fig.4 : FOCUS ERROR AMPLIFIER

7) Tracking Error Amp

The photo-detector E and F outputs are passed through a differential amp and an error amp and (E-F) is output from Pin 24 as the TE signal.
The TEY voltage low-frequency component is:

$$TEY = (E-F) \times \frac{63k\Omega}{(31k\Omega+16k\Omega)} \times \frac{R109}{17k\Omega}$$

: (PU TE output level × 5.36)

The TE waveform of about 1.5Vp-p with REFO as the reference is obtained as the TE output (Pin 24). The final-stage amp cutoff frequency is 19.5kHz.

8) Tracking Zero Crossing Amp

The tracking zero crossing signal (below, TEC signal) is the TE waveform (Pin 24 voltage) amplified four times and is used to find the zero crossing points of the tracking error with the UPD63702GF servo LSI. This zero crossing point is found for the following two reasons.

(1) To count tracks for carriage moves and track jumps
(2) To detect the direction in which the lens is moving for tracking closing (This is used in the tracking brake circuit, described Page 9 b).)

The TEC signal frequency range is 500Hz - 19.5kHz.

TEC voltage = TE level × 4

In other words, the TEC signal level is calculated at 6Vp-p. This level exceeds the op-amp's output range and the signal is clipped, but this can be ignored because this signal is used by the servo LSI only at the zero crossing point.

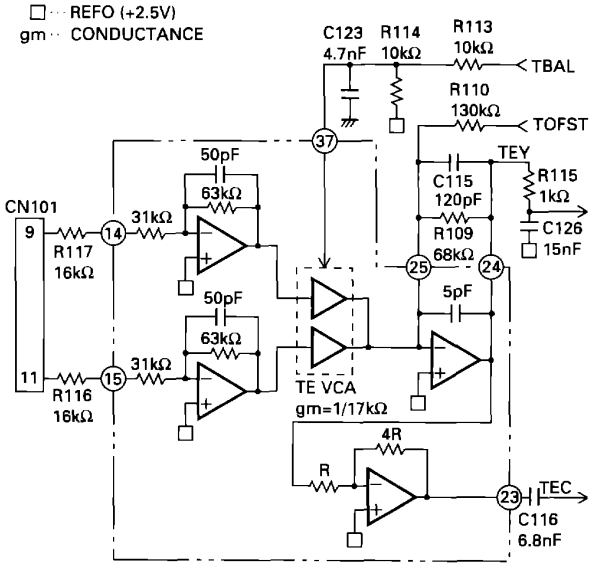


Fig.5 : TRACKING ERROR AMPLIFIER & TRACKING ZERO CROSSING AMPLIFIER

9) MIRR (Mirror) Circuit

The MIRR signal shows the on track and off track data and is output from Pin 31.

When the laser beam is

On track: MIRR = "L"

Off track: MIRR = "H"

This signal is used in the brake circuit, described Page 9 b).

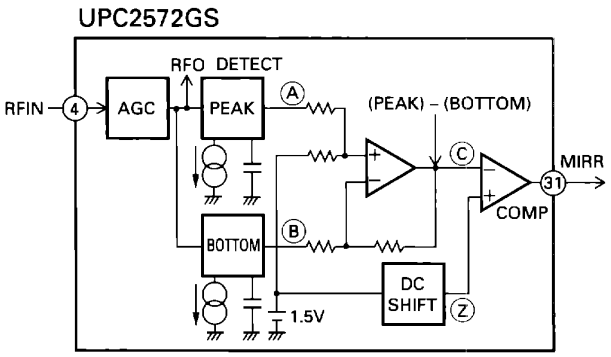


Fig.6 : MIRR CIRCUIT

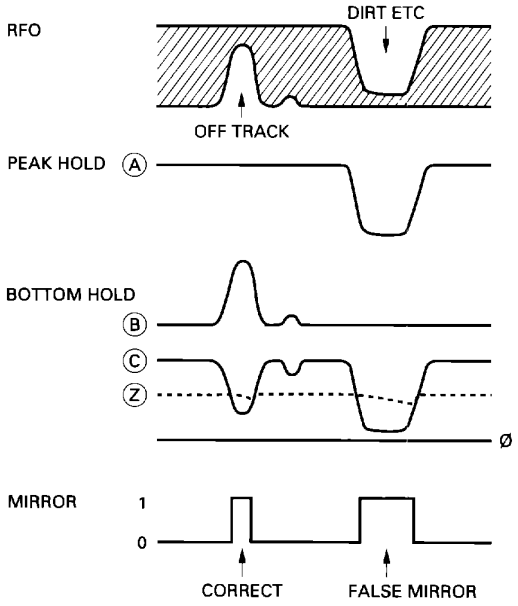


Fig.7 : MIRR CIRCUIT & SIGNAL DIAGRAM

10) 3TOUT Circuit

This circuit detects variations of the RF signal when an external interference is input into the focus servo loop and outputs the phase difference between the FE signal and the RF level variation signal from Pin 30. The signal has been passed through a low-pass filter (fc = 40Hz). This signal is used for the FE bias automatic adjustment, described Page 12 4).

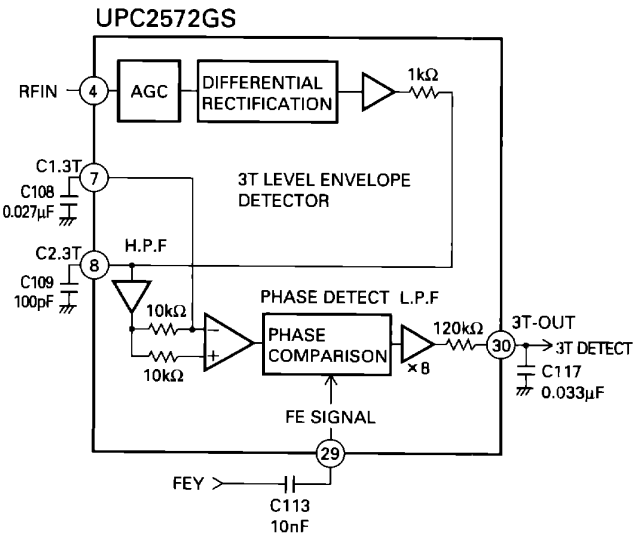


Fig.8 : 3T OUT CIRCUIT

1.2 SERVO SECTION (UPD63702GF: IC201)

This section can be divided into two parts.
One is the servo processing section, which handles such servo controls as error signal equalizing, in focus, track jump, and carriage move. The other is the signal processing section, which handles data decoding, error correction, and interpolation processing.
This IC converts the FE and TE signals from analog to digital and outputs the focus, tracking, and carriage drive signals via the servo block. Also, the EFM signal from the pre-amp is decoded in the signal processing section and finally output as audio signals after D/A conversion. (This IC has a built in audio digital-analog converter.) The decoding process also creates the spindle servo error signals, which is fed to the spindle servo block to create the spindle drive signal.
The focus, tracking, carriage, and spindle drive signals are then amplified by IC301, XLA6997FP and fed to their respective actuators and motors.

1) Focus Servo System

The main focus servo equalizer is in the UPD63702GF. Figure 9 is the focus servo block diagram.
In the focus servo system, the lens must be brought within the in-focus range for focus closing. Therefore, the lens is raised and lowered according to the triangular focus search voltage to find the focus point. During this time the spindle motor is kicked and kept rotating at a set speed.
The servo LSI monitors the FE signal and the RFOK signal and automatically carries out the focus close operation at the appropriate point.
Focus closing is carried out when the following four conditions are all met.
(1) The lens is moving from far to near toward the disc surface.
(2) RFOK = H
(3) The FZD signal (within the IC) is latched at high.
(4) FE = 0 (REFO reference)

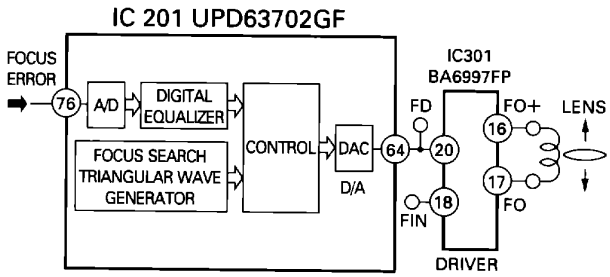


Fig.9 : FOCUS SERVO BLOCK DIAGRAM

When the above conditions are all met and the focus is closed, the XSO signal is shifted from high to low, then 40ms later, the microcomputer begins to monitor the RFOK signal that is passed through the low pass filter.
When the RFOK signal is judged to be low, the microcomputer carries out various actions such as protection.
Figure 10 shows the series of operations for focus closing (for the case where focus cannot be closed.) Also, in focus-mode-selection during test mode when the display is 01, if the focus close button is pressed, the S curve, search voltage, and actual lens movements can be checked.

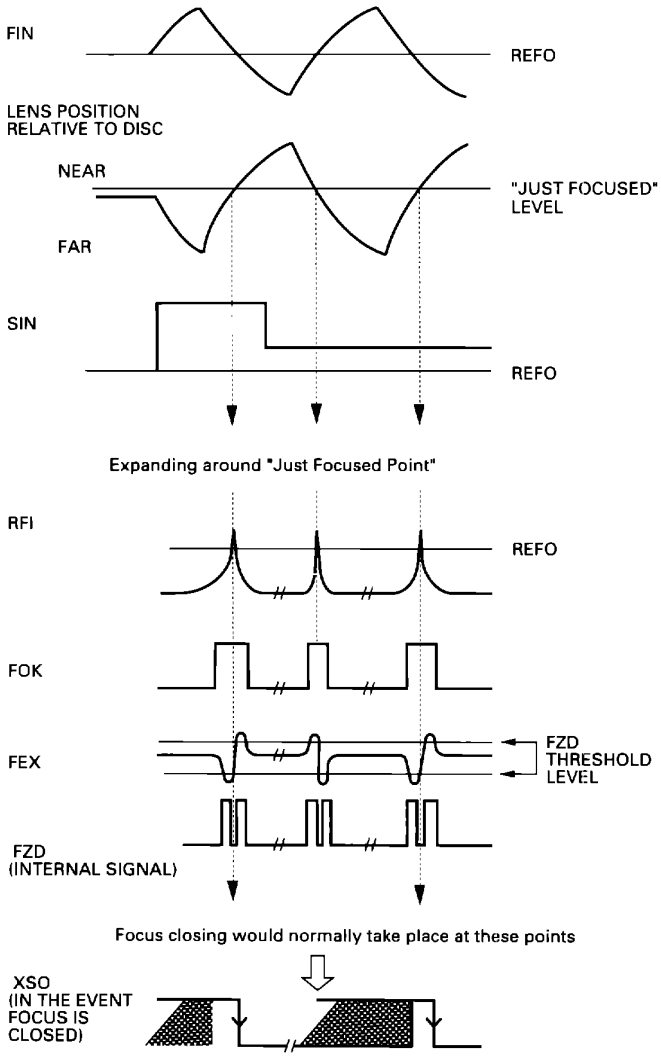


Fig.10 : FOCUS CLOSING SEQUENCE

2) Tracking Servo System

The main tracking servo equalizer is in the UPD63702GF. Figure 11 is the tracking servo block diagram.

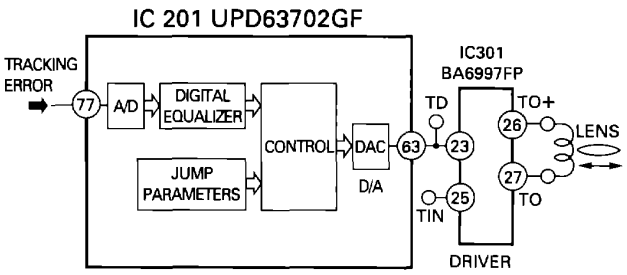


Fig.11 : TRACKING SERVO BLOCK DIAGRAM

a) Track Jump

When the LSI receives the track jump command from the microcomputer, the track jump is carried out automatically by the auto sequence function within the LSI. This system has six types of track jumps used for searches: 1, 4, 10, 32, 32 × 2, and 32 × 3. In test mode, in addition to these jumps, CRG moves can be executed and checked by mode selection. For track jumps, the microcomputer sets half of the total number of jumps (2 tracks for a 4 track jump) and counts the set number of tracks using the TEC signals. From the point when it has counted the set number of tracks, it outputs the brake pulse for a fixed period of time (set by the microcomputer) to stop the lens. In this way, it can close the tracking and continue normal play.

To improve the servo loop re-closing performance just after track jump, the brake circuit comes on for 60ms after the end of the brake pulse and the tracking servo gain is increased.

Fast forward and reverse operations in normal mode are realized by executing consecutive single track jumps. The speed is about 10 times as high as in normal play.

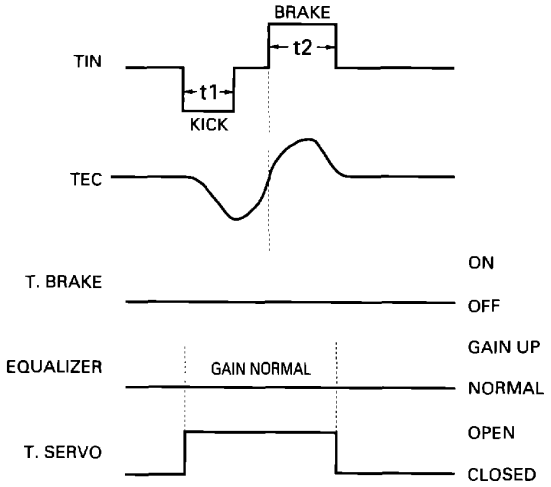


Fig.12 : SINGLE TRACK JUMP

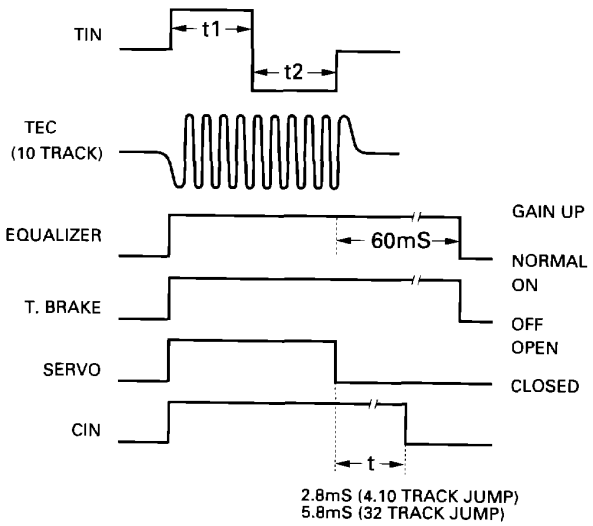
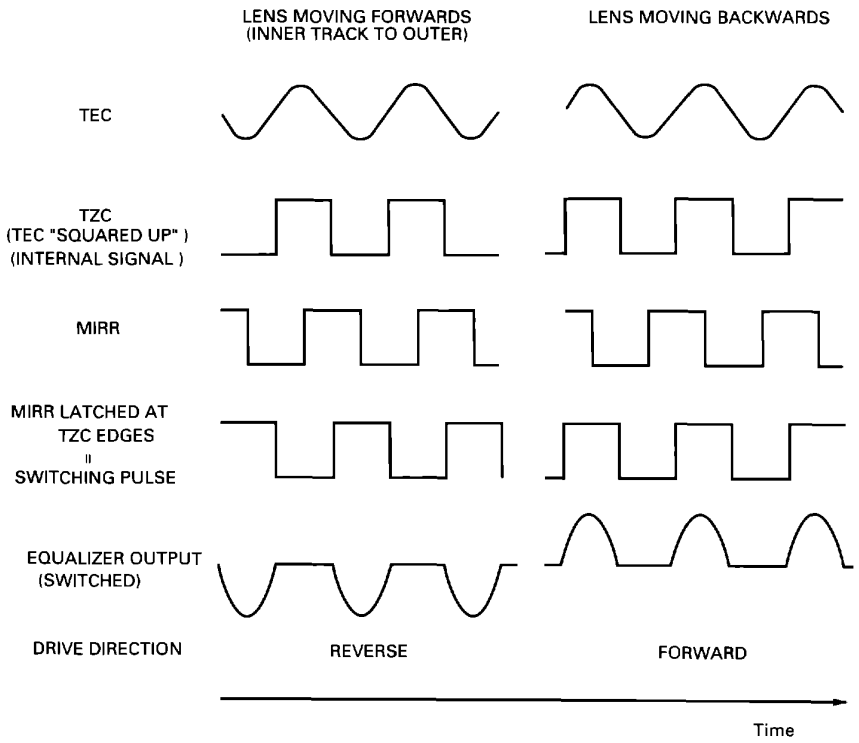


Fig.13 : MULTI-TRACK JUMP

b) Brake Circuit

This relies on determining which direction the lens is moving and only outputting the portion of the drive waveform which acts to oppose this motion. Direction of motion is deduced from TEC and the MIRR signal and knowledge of their phase relation.



Note: Equalizer output assumed to hava same phase as TEC.

Fig.14 : TRACKING BRAKE CIRCUIT

3) Carriage Servo System

The carriage servo supplies the tracking equalizer's low-frequency component (lens position information) output to the carriage equalizer and after applying a fixed amount of gain, outputs the drive signal from the servo LSI. This signal is applied to the carriage motor through the driver IC.

When the lens offset reaches a certain level during play, the entire PU must be moved in the forward direction. Therefore, the equalizer gain is adjusted to output a voltage higher than the carriage motor starting voltage. In actual operations, a certain threshold level is set for the equalizer output within the servo LSI and the drive voltage is output from the servo LSI only when the equalizer output level exceeds that threshold level. This reduces power consumption. Also, due to disc eccentricity and other factors, the equalizer output voltage may cross the threshold level a number of times before the entire PU starts to move. In this case, the drive voltage waveform, (which is applied) from the LSI, becomes pulsative.

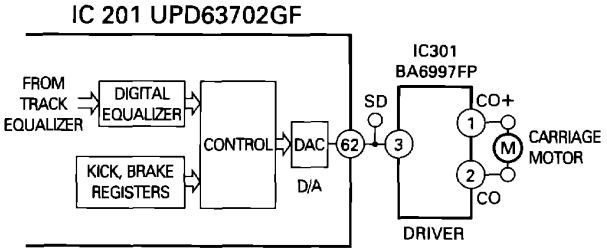


Fig.15 : CARRIAGE SERVO CIRCUIT

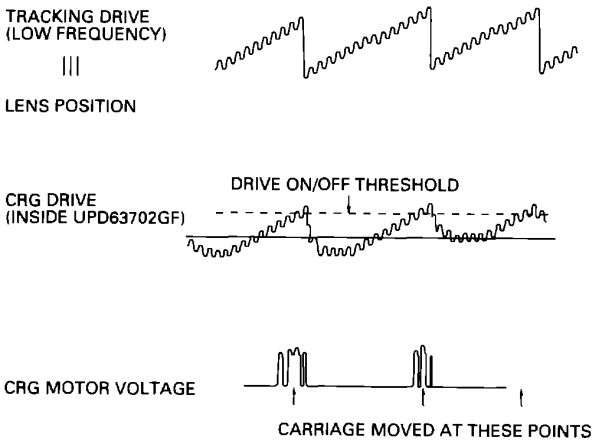


Fig.16 : CARRIAGE WAVEFORM

4) Spindle Servo System

The spindle servo has the following modes.

(1) Kick: The mode used for disc rotation acceleration during setup

(2) Offset:

a) Used during setup from the end of kick until the AGC end

b) Used during play when the focus is unlocked until it is recovered

Both of these are for holding the disc rotation rate near the normal rotation rate.

(3) Adaptive servo: CLV servo mode for normal operation

In the EFM demodulation block, the frame sync signal and internal frame counter output signal are sampled each WFCK/16 and a signal is produced indicating whether or not they match. Only after this signal is in non-match mode eight consecutive times, is the system treated as out of sync, at other times it is treated as in sync. In this adaptive servo mode, a servo mode for pulling the system into sync is automatically selected when the system is out of sync and the regular servo is automatically selected when the system is in sync.

(4) Brake: The mode for stopping the spindle motor rotation

The brake voltage is output by the microcomputer from the servo LSI. At this time, the EFM wave form is monitored within the LSI and if the longest EFM pattern exceeds a certain interval (when the rotation is slow enough), a flag is registered within the LSI and the microcomputer switches the brake voltage off. If the flag is not registered within a certain period of time, the microcomputer switches from brake mode to stop mode which lasts for a fixed period of time. In this case, ejection of the disc can only occur after this period of time.

(5) Stop: The mode used during power on and ejection

At this time, the voltage across the spindle motor is 0V.

(6) Rough servo: The mode used for carriage feed (carriage move during a long search)

The linear speed is calculated from the EFM wave form and a high level or low level is input to the spindle equalizer. In test mode, this mode is also used for the grating check.

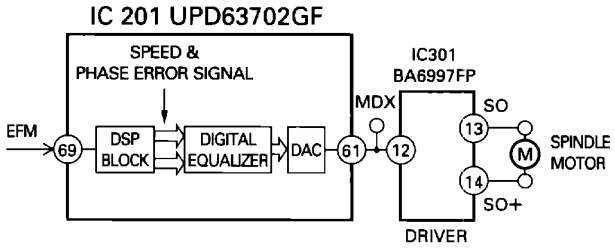


Fig.17 : SPINDLE SERVO BLOCK DIAGRAM

1.3 AUTOMATIC ADJUSTMENT FUNCTIONS

This system uses a pre-amp (UPD2572GS) and servo LSI (UPD63702GF) to automate all circuit adjustment. All adjustments are carried out automatically each time a disc is inserted or the CD mode is selected with the source key. Here is how each automatic adjustment works.

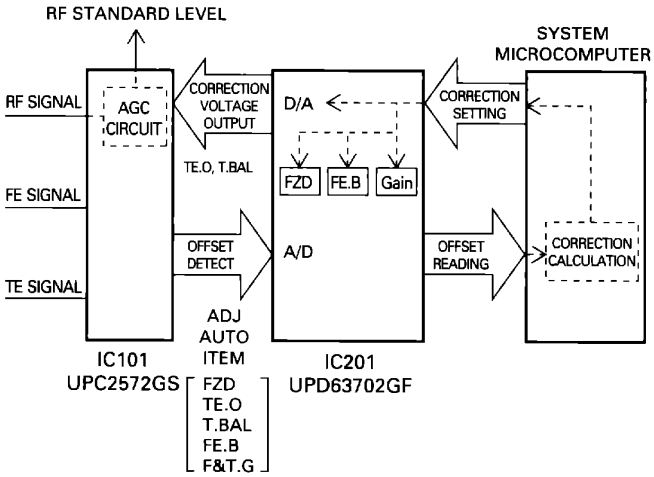


Fig.18 : AUTOMATIC GAIN CONTROL

1) FZD Cancel Setting

This setting is to make the focus closing reliable. When the power is switched on, the FE offset level is read and a voltage opposite to this offset value is written to the CRAM in the IC to cancel the offset. In this way, the FZD threshold level can be set to a constant value (+150mV) and one of the conditions within the IC for focus closing "that the FZD signal is latched at high" can be fulfilled reliably.

2) TE Offset Automatic Adjustment

This function adjusts the pre-amp TE amp offset to 0 V when the power is switched on.

The adjustment procedure is:

(1) The TE offset (LD off) is read by the microcomputer via the servo LSI (offset = TE1).

(2) The microcomputer calculates the voltage to be corrected from the value of TE1 and sets the output of Pin 65 of the servo LSI (signal name: TOFST). The concrete calculation method is as follows.

TOFST2 = TOFST1 + TE1 × R110/R109

3) Tracking Balance Automatic Adjustment

This adjustment equalizes the difference in sensitivity of the E channel and F channel of the TE output. In actual practice, the TE waveform is adjusted to be vertically symmetrical about REFO.

The adjustment procedure is:

(1) After focus closing, the lens is kicked in the radial direction to reliably generate the TE waveform.

(2) At this time, the microcomputer reads the peak and bottom of the TE waveform through the servo LSI.

(3) The microcomputer calculates the value of the offset and the correction voltage to output from Pin 66 of the servo LSI (signal name: TBAL).

(4) The voltage output from the servo LSI is input to Pin 37 of the pre-amp (IC101: UPC2572). This pin is the TEVCA amp control voltage pin. The gain for the E channel and F channel within the pre-amp is varied according to the input voltage to adjust the tracking balance and make the TE waveform vertically symmetrical about REFO.

4) FE Bias Automatic Adjustment

This adjustment is made to maximize the RFI level during play by optimizing the focus point. This adjustment utilizes the phase difference between the RF waveform 3T level signal and the focus error signal. Since an external interference is input into the focus loop, this adjustment uses the same timing as the auto gain control, explained below.

The adjustment procedure is:

(1) External interference is injected into the focus loop by command from the microcomputer (within the servo LSI).

(2) The RF signal 3T component level variation is detected within the pre-amp.

(3) The phase difference between the FE signal due to external interference input and the above 3T component is detected, to sense the focus deviation direction, and the result is output as a DC voltage from Pin 30 (3T-OUT) of the pre-amp.

(4) The 3T-OUT voltage is input to Pin 75 (A/D port) of the servo LSI and the microcomputer reads the 3T-OUT voltage through the servo LSI.
(5) The microcomputer calculates the required correction and adjusts the focus loop offset in the servo LSI.

In the same manner as the auto gain control, this adjustment is repeated a number of times to raise the adjustment precision.

5) Auto Gain Control (AGC)

This adjustment has already been used in the previous generation of CD modules. This function automatically adjusts the focus and tracking servo loop gain.

The adjustment procedure is:

(1) External interference is injected into the servo loop.
(2) The error signals (FE, TE) when the external interference is injected are passed through a band pass filter and the G1 and G2 signals are obtained.
(3) The microcomputer reads the G1 and G2 signals through the servo LSI.
(4) The microcomputer calculates the required correction and adjusts the loop gain within the servo LSI.

To raise the adjustment precision, the same adjustment procedure is repeated a number of times.

6) Initial Adjustment Values

All the automatic adjustments use the previous adjustment value as the initial value as long as the microcomputer power supply is not cut off (the backup is not cut off). If the backup is cut off, automatic adjustment does not start from the previous adjustment value, but rather from the default setting.

7) The Coefficient Display for Adjustment Result

The results of all automatic adjustments can be displayed and checked in test mode.

The coefficient displays for each automatic adjustment are as follows.

(1) FZD cancel, TE.OFST cancel, T.BAL, FE.bias
Reference value = 32 (A coefficient of 32 indicates that no adjustment was necessary).
The display is in units of about 40mV.
Example: FZD cancel coefficient = 35
35-32 = 3 $3 \times 40mV = 120mV$
Since the corrected value is approximately + 120mV, the FE offset before adjustment was - 120mV.

(2) Focus and tracking gain adjustment
Reference value: Focus = 13, tracking = 20
The coefficient display shows the gain derease relative to the reference value.
Example: AGC coefficient = 40
Gain = 20log (20/40) = - 6dB

1.4 POWER SUPPLY AND LOADING SECTION

The power supply within the system makes the loading motor drive power supply VM (7.6V) and 5V Reg IC power (6.9V) from VD (8.3V) supplied by the mother board. The disc detection LED drive voltage and the CD driver IC power supply use VD directly.

The microcomputer switches the CD driver and laser diode on/off with "CONT" and switches the 5V power on/off with "CD5VON". There is no particular control pin for the loading motor driver, but the "EJ" and "LOAD" input signals serve the same role.

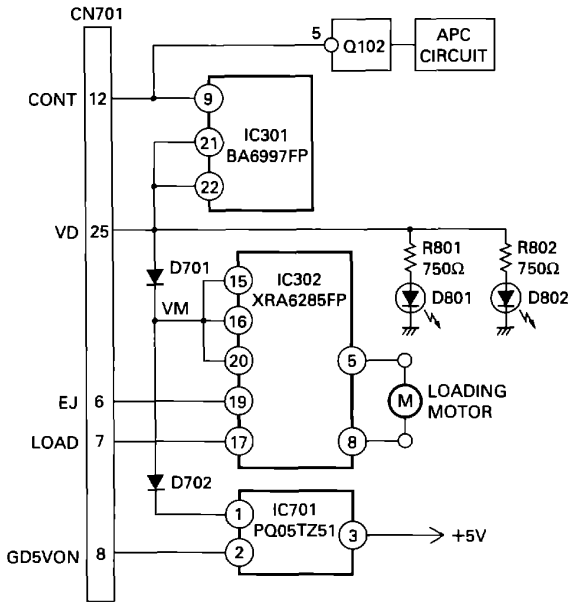


Fig.19 : POWER SUPPLY & LOADING SECTION

2. THE SUMMARY OF STRUCTURE

● Disc Loading Operations

1. There are two photo transistors before and after the rubber roller that conveys the disc. They receive light from the corresponding two LEDs. (When light is received, the photo transistor voltage is low.)
2. When a disc is inserted to just before the rubber roller, the front section photo transistor (P1) voltage goes high and the loading motor drive starts.
3. The drive power of the motor is transmitted by gear and the rubber roller rotates to transport the disc.
   The rubber roller is at one end of the loading arm and lifts up the guide arm. The guide arm is positioned by two springs. Therefore the guide arm and the rubber roller provide the appropriate pressure to feed out the disc between them.
4. The clamper arm also has a disc centering mechanism that discriminates the size of the disc and clamps the disc at the center of the spindle motor. The centering arms form a set left and right on the clamper arm and can move centering on their pivots. At the end of the centering arms are the lock arms. (The lock arms rotate about the centering pins and are locked to the clamper arm for 8cm discs.)
   For 12cm discs, the lock arms are unlocked and move to the position indicated in Figure 21.
   The detection arm, which has its center of rotation on the centering arm on the right side of the diagram, has different positions for 8cm and 12cm discs. When one of these discs is positioned on the spindle, the detection arm moves clockwise according to the external diameter of the disc and moves the detection lever to the bottom side of the figure.

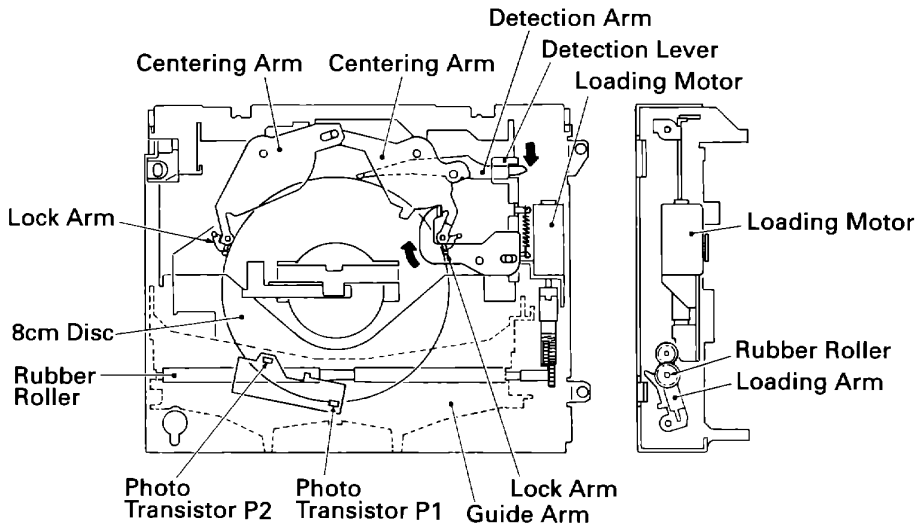


Fig.20

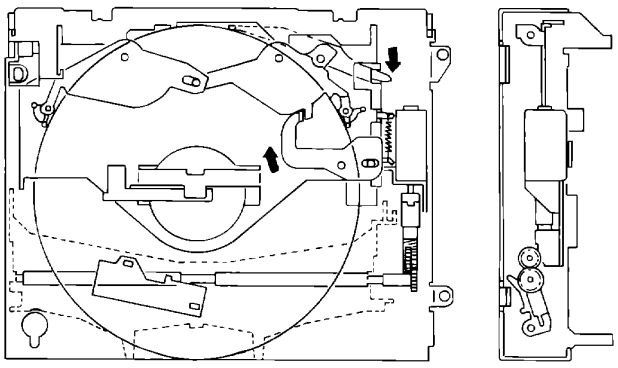


Fig.21

● Clamp Operation

The rack gear touching the detection lever meshes with the gear driven by the loading motor and rotates the L arm in the direction of the arrow in Figure 23.
The clamper arm, lifted up by the L arm, descends and clamps the disc. Also, the lock lever linked with the L arm moves the loading arm.
Because of this, the rubber roller descends, separating from the disc. At the same time the guide arm also descends. Loading ends at the position where the lock lever switches on the clamp switch.

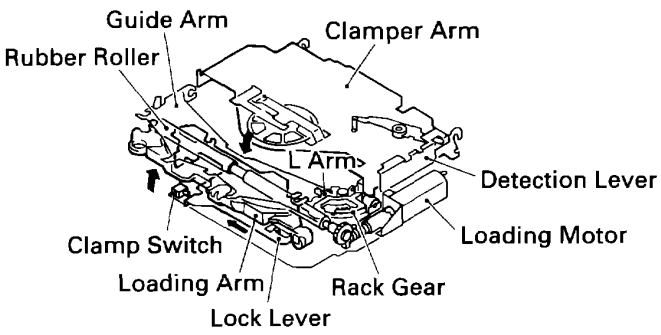


Fig.22

● Mechanism Lock Operation

1. In the eject state, both ends of the loading arm touch the bottom of the frame, the floating section front side is pushed down against the resistance of the mechanism suspension spring, and the disc insertion height position is found.
   For play, the loading arm rotates and the separation of the two ends from the frame bottom releases the floating section.

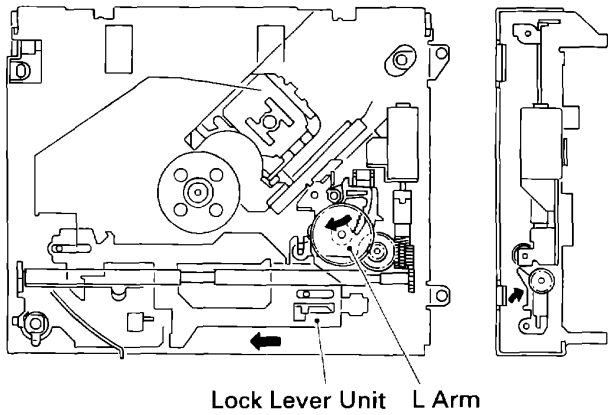


Fig.23

● Eject

1. The eject mechanism operates by reversing the rotation which takes place when the loading motor loads. The L arm moves and operates the mechanical lock, the clamp is released, the roller is applied, and the disc is conveyed. Loading stops when the photo transistor to the rear of the rubber roller (P1) is illuminated.
   However, in case of an 8cm disc, motor revolution stops a fixed period of time after P2 is illuminated. The disc type is recognized during play, by the voltage of the photo transistor (P1) located in front of the rubber rollers.

3. DISASSEMBLY AND ASSEMBLY

Remove in the order of the circled numbers in the disassembly diagram.

1. Remove the CD Mechanism Module

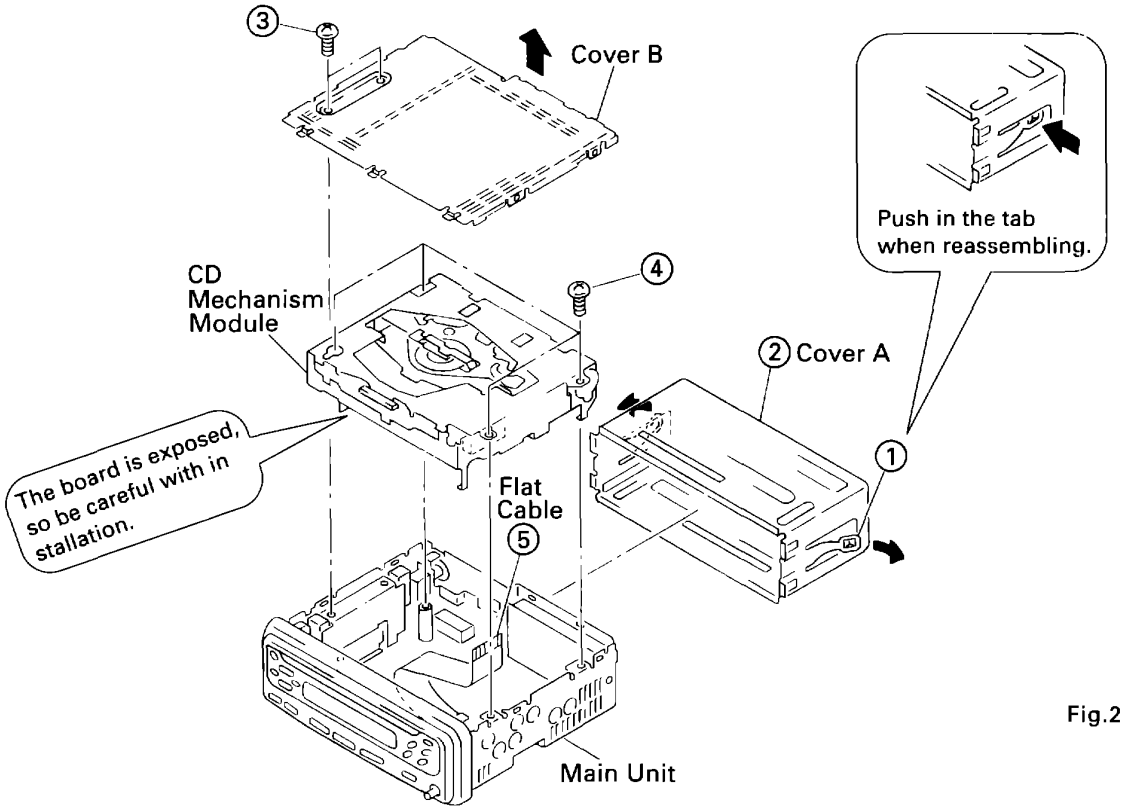


Fig.24

2. Remove the Damper and the Frame Unit

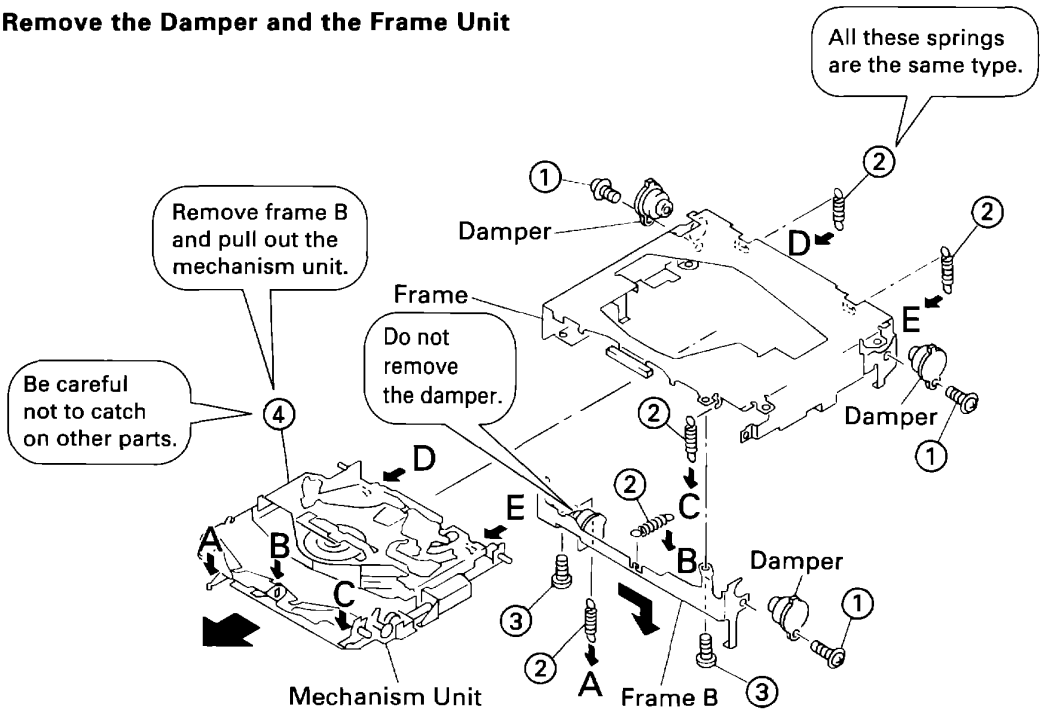


Fig.25

3. Remove the Spindle Motor

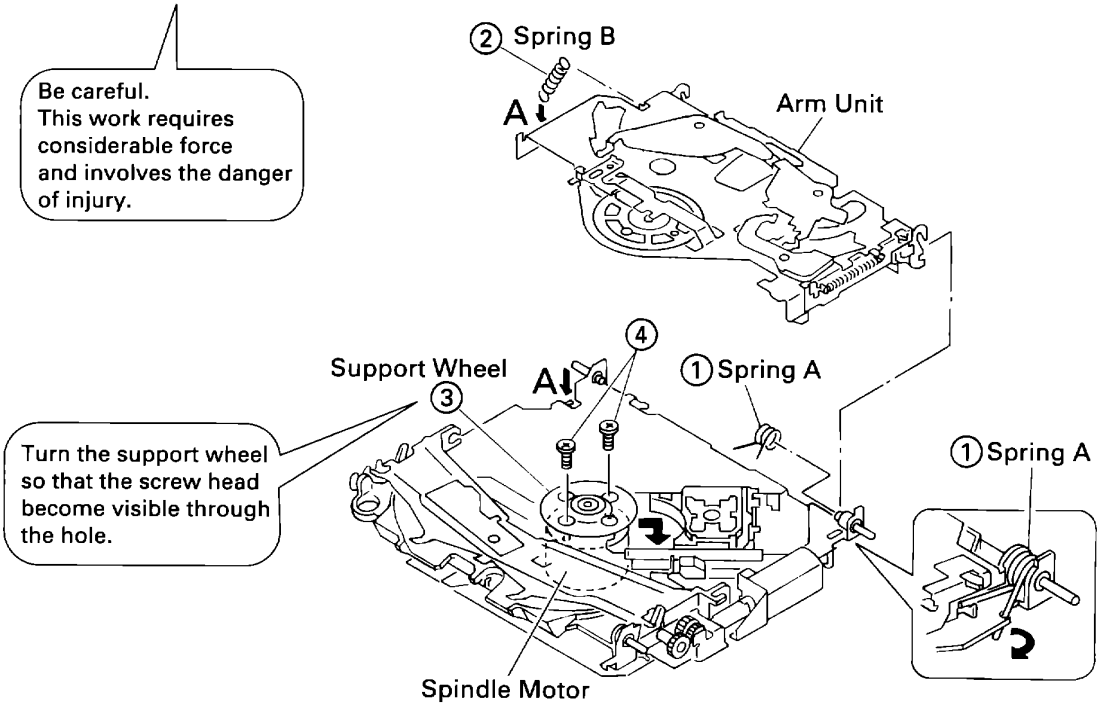


Fig.26

4. Remove the Loading Motor

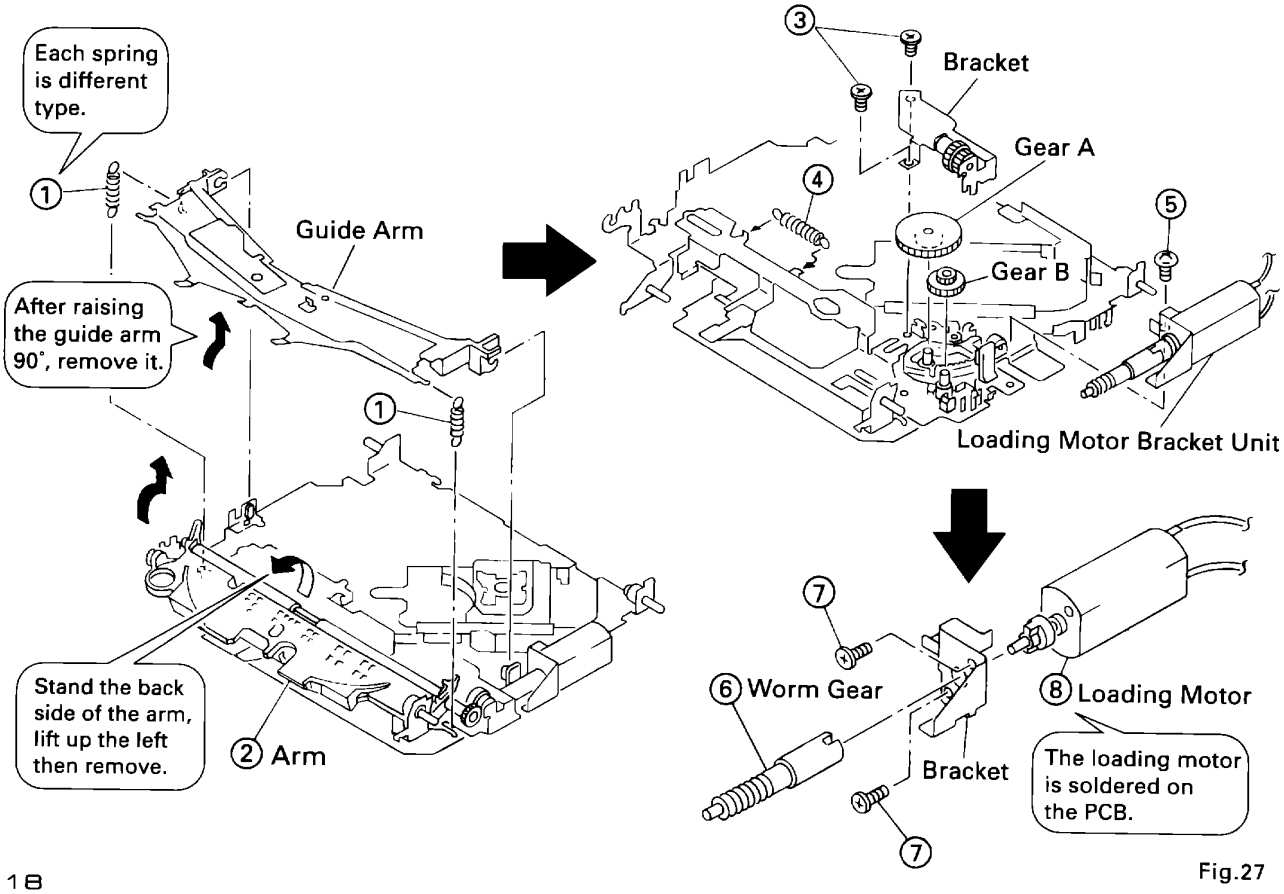


Fig.27

5. Remove the PU Unit and the Carriage Motor

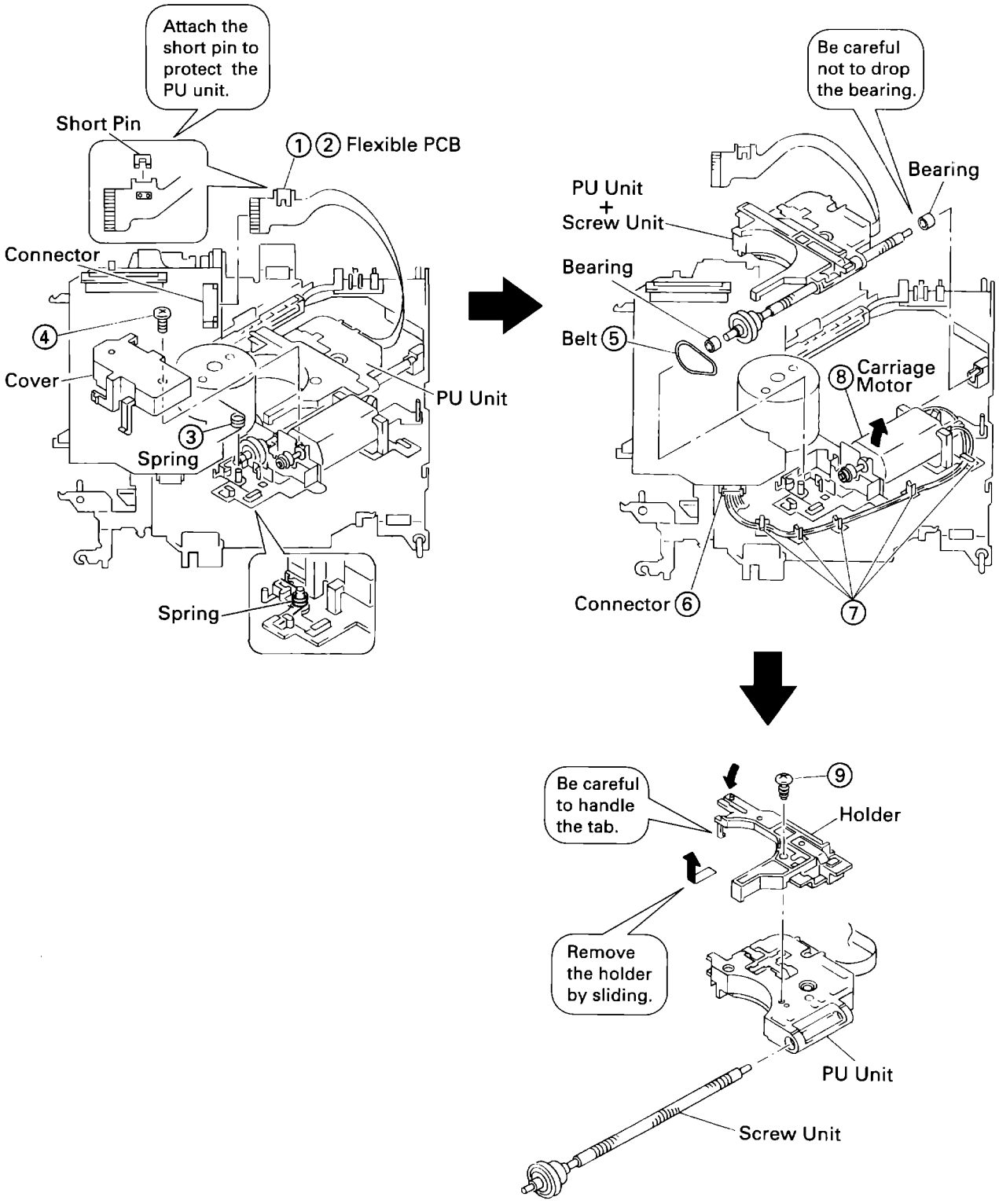


Fig.28